



CHEETAL

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Securing the Future

Panthera tigris tigris (Royal Bengal Tiger)

Photo Courtesy "Takdir The Tiger Cub"

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Rich Oak (*Quercus semicarpifolia*) forests of Kedarnath Sanctuary in Rudraprayag district of Uttarakhand. Trees laden with lichens can also be seen.

Photo - Bhagat Singh

Help Conserve **WILDLIFE**



**PRIME MINISTER,
INDIA**

MESSAGE

The conservation of wildlife has acquired urgency for it is relevant for human survival. Such are the linkages between various species in Nature that the elimination of any one species creates problems in others sooner or later. Humankind has already destroyed many species. Let us not do more harm.

India has always seen life as one. We should set an example in conserving wildlife. My good wishes to Wildlife Week. I should like our children especially to know more about indigenous flora and fauna so that they can feel the oneness and wholeness of life and contribute to a better future for all living creatures.

Indira Gandhi

New Delhi
October 1, 1982

(Indira Gandhi)



WILDLIFE WEEK '82

Acknowledgement

Wildlife Preservation Society of India, puts its deep appreciation on record for Dr. Rajendra Dobhal, Director, Uttarakhand State Council for Science and Technology for his valuable support to the Society by sanctioning financial support for a project on "Strengthening the Wildlife Preservation Society of India, Dehra Dun". He took personal interest in supporting this organization which is the oldest such Society in North India for Wildlife Conservation. He visited the Society's office in January, 2008 and appreciated the utility of the activities of the Society and its quarterly journal "Cheetal" in spreading awareness about conservation among the general public. A sum of Rs. 143000.00 (Rupees One Lakh Forty Three Thousand) has been sanctioned for one year and an advance of Rs. 110000/- has been released. The Society is grateful to Dr. Dobhal personally and to UCOST in general for timely help and support. I hope the Society will come up to his expectations and with their continued help and support the Society will be able to achieve its objectives.

UCOST is a growing organization in the field of science and technology in Uttarakhand and under the able leadership of Dr. Rajendra Dobhal it is helping various institutions and colleges in this field.

A.S. Negi

Important Notice to Members

Two Nature Trails will be conducted by WLPSI, one each in the month of April and May 2008. Total financial assistance of Rs. 15,000 has been sanctioned by UCOST for these trails which can be utilized for hiring of transport etc. Suggestions and nominations are invited from members. Kindly mail your nominations / suggestions at priyanka_negi@rediffmail.com or by post to A.S. Negi, Executive Vice – President, 300 Model Colony, Aragarh, Dehra Dun. 248001 (Phone: 9837015819 / 2675138 / 2652410)

A.S. Negi

Cover Page

The Royal Bengal Tiger (*Panthera tigris tigris*) is one of the five surviving sub species of tiger in its entire range. This subspecies is found in India, Nepal, Bangladesh, Myanmar, Bhutan and China. Out of the total population of tigers in its range, 50% are still believed to be surviving in our country. Beauty, grace and power make the tiger one of the world's most loved animals, yet it is precisely these qualities that have been its down fall. Poaching for skins and body parts, loss of habitat and prey and conflicts between people and wild tigers have caused catastrophic declines in tiger numbers throughout their range. If wild tigers are to survive through the next century all concerned must act now. In the recent first ever scientifically conducted estimation exercise by the Ministry of Environment and Forests, Govt. of India with technical support from the Wildlife Institute of India, Dehra Dun and the State Forest Departments, the decreased tiger numbers in the country have been a cause of great concern for conservationists all over the world. Sariska Tiger Reserve has lost all its tigers. Some other tiger reserves are also showing declining trends. Corbett Tiger Reserve of Uttarakhand has given a great hope by recording the highest density of Royal Bengal Tigers anywhere in its global range. The worst hit areas are the habitats outside tiger reserves due to biotic interference, degradation of habitats, loss of prey, poaching and loss of corridors and connectivities. Though Govt. of India has taken a number of steps including high financial allocation for tiger conservation but the enthusiasm in the state governments seems to be missing in most cases. The state governments will have to come forward in a big way if the future of the tiger is to be secured.

In 1972 the world met in Stockholm, Sweden and discussed the Human Environment for the first time under the auspices of the United Nations. At that conference Mrs. Indira Gandhi had a vision of the world that poverty was one of the great polluters.

Since then the world may not have done much to end poverty and economic injustice everywhere, but it has understood that poor people tend to overuse their environment and subsequently a degraded environment is unable to support the poor. Indeed it pushes people into even greater poverty. Underdevelopment that traps people in poverty

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Important Notice to Members

Two Night Trips will be conducted by WLPST, one each in the month of April and May 2003. Total financial assistance of Rs. 15,000 has been sanctioned by UCOST for these trips which can be utilized for hiring of transport etc. Suggestions and arrangements are invited from members. Kindly mail your nominations/suggestions at wlpst@rediffmail.com or by post to A.S. Negi, Executive Vice-President, WLPST, Colony, Angkor, Bhubaneswar-751001 (Phone: 9837013819/2675138)

A.S. Negi

Lecture by Prof. Wangari Muta Maathai Nobel Laureate

“Environment, Democracy and Peace: A critical Link:

Your Excellencies,
Ministers,
Ladies and gentlemen

I am deeply honoured and privileged to be here tonight with you. Let me apologize at the outset for the failure to come and address you in the year 2005 when the plans had to change due to the need to hold a referendum on a proposed constitution which by the way has not yet been accomplished so might as well have come.

I wish to thank the Rajiv Gandhi Foundation for their warm invitation. We are deeply indebted to H.E. Mrs. Sonia Gandhi for the warm welcome granted my delegation and me.

We treasure the honour and the privilege to share this moment with your Excellency. The legendary leadership of the Gandhi family has been a great inspiration to the people of the world for many years and it is indeed a privilege to be associated with this family at this lecture.

For a long time I have wanted to respond to the many warm invitations to come to India but until now, events beyond our control prevented me from coming here and share with you some thoughts on the environment. I am especially happy to be here today therefore, and to join you in remembering and honouring the memories of the great son of India that is Mr. Rajiv Gandhi.

In 1972 the world met in Stockholm, Sweden and discussed the Human Environment for the first time under the auspices of the United Nations. At that conference it was Mrs. Indira Gandhi who drew attention to the world that poverty was one of the great pollutants.

Since then, the world may not have done much to reduce poverty and economic injustice everywhere, but it has understood that poor people tend to overuse their environment and subsequently, a degraded environment is unable to support livelihood. Indeed it pushes people into even greater poverty. Understanding that linkage between poverty

and the environment is crucial to sustainable development and we owe that insight to Mrs. Indira Gandhi.

It took the next three decades before the Norwegian Nobel Committee would draw the world's attention to the fact that there is a strong linkage between the environment, governance and peace. The Committee called upon the world to expand the definition of peace and security and to include in that definition, responsible and accountable management of the limited resources on the planet. It also called upon the world to look at the more equitable distribution of those resources.

In order for humankind to manage and share resources in a just and equitable way, there is need for a governance system that is more responsive and inclusive; one in which most people feel that they belong, and one in which the voice of the minority is listened to even if the majority will have their way; one that respects human rights, the rule of law and deliberately and consciously promotes equity. Indeed, many of the conflicts and wars in the world are over access, control and distribution of resources like water, food resources, grazing ground, minerals and land.

Conflicts and wars are born out of a feeling of injustice, exclusion and oppression. When people feel that they are not receiving justice and equity, that they are marginalized or discriminated against, they seek justice and equity, using whichever means are available to them, sometimes violence and sometimes non-violence.

By managing resources better, by recognizing the link between sustainable management of limited resources and conflicts, mankind is more likely to pre-empt the root causes of many conflicts and wars and create a more peaceful and secure world. That is the link between environment and peace. You will remember that when the environment was recognized in the year 2004 by the Nobel Peace Prize Committee, many people had doubts on the connection between peace and trees. Well, that is the connection. By managing resources better and recognizing this linkage we can decide to get to the root causes of the conflicts.

An appreciation that a degraded environment leads to conflicts as communities scramble for the available limited resources is what partly inspired the establishment of the Green Belt Movement, some thirty years ago in Kenya. Initially the activity was devoted to planting trees and protecting forests, to meet the felt needs of communities. But in the course of time, the need for good governance, respect for human

rights and promotion of equity became evident because without these it was impossible to live in peace in long term. Therefore, the Green Belt Movement embraced a pro-democracy campaign for better governance even while working for the protection of the environment. During that period an approach for environmental primary care was developed that was intended to empower citizens to take action to improve especially their immediate environment, understand how good governance is necessary for responsible and accountable management of resources and embrace the challenge of being part of the solution rather than complaining about it.

The Green Belt Movement has shared this approach with many other countries especially in Africa where the continent is threatened especially by desertification process, where the majority of people still practice subsistence agriculture and depend on fuel energy. The Green Belt Movement shares information and opportunities have experimental learning by working directly with rural communities. The involvement of citizens is extremely important because citizens must recognize the resources and the process of protecting them. Therefore, informing, practicing, getting rid of inertia and moving to take action is very important in this campaign.

Much of the funds raised both at home and abroad go into planting of trees, for educating people on civic and environmental education, advocacy and networking.

The largest numbers of participants in the Green Belt Movement are women and they have made tree planting an income generating activity, because for every tree that is planted and survives women are paid about ten US cents and this money is used to meet the felt needs of families like food, clothing, School fees and domestic utensils and even for shelter. And there is nothing more satisfying than to have a family tell you that they have beautified their homes with the trees they themselves planted.

The Green Belt Movement was initiated in 1977 at the occasion of World Environment Day and seven trees were planted. Today, we are counting forty million trees and are still counting. And so we feel extremely encouraged from seven trees to forty million trees. The reason we share this number is not to impress, because there is nothing to impress about, because there is still a lot of work to be done, but especially to be able to empower ourselves and to appreciate that no matter how much the problem is, we must never give up. And that we start small

and work and work towards our destiny. It is reason for ordinary citizens to empower themselves and to take action rather than complain, and also to encourage each other to take action.

It is also for that reason that recently, with UNEP, the United Nations Environment Programme, the Green Belt Movement and ICRAF launched a campaign to plant a billion trees worldwide. And if that word has not reached India I hope it will reach today. We are in need of planting a billion trees worldwide and I know Indians can do that on their own if every Indian planted a tree. I want to give you that website, it is www.greenbeltmovement.org. Access that website and click on the left hand side you will find a logo which says "plant for the planet". Click that and it will lead you to a website, you can also approach it from <http://www.unep.org/billiontreecampaign/>. This campaign serves to raise awareness on the need to inform ourselves about climate change, commit to doable action and especially plant trees, which would eventually sequester carbon.

Your Excellency, I want to pause here and congratulate the people of New Delhi. I have never been to a city more green than New Delhi. And it is quite obvious that these trees have been deliberately and consciously chosen and planted and nurtured. I want to take a few pictures so that I can share them with the rest of the world wherever I go. I am very impressed.

In doing the work of the Green Belt Movement, we have been faced with many challenges some of which I would like to share. First of all, we find that everybody wants to delay decisions on actions which would benefit the environment. The responsibility to inform and encourage people to take action becomes a very heavy burden because as soon as you have spoken people seem to forget what you have just said.

As for the poor in the world, they are often caught in a vicious cycle of living in a degrading environment and therefore, remaining poor or getting poorer because their environment continues to degrade. Sometimes a degraded environment is all that is available to them. They are often trapped in a cycle of poverty, powerlessness and degraded land and settlements. The challenge for them to break that cycle through training and empowerment initiatives takes resources, time, patience and commitment. Many people want results yesterday and so it is very, very difficult sometimes to convince them, especially the development agencies, that these issues take time, that we need to be patient.

As we all know, the environment degrades slowly and may not be noticed by some people even if it happens right there before their very eyes. If they are poor, selfish, greedy or corrupt they would be more concerned about satisfying their immediate needs and wishes than worrying about the consequences of their actions especially in the long term.

Unfortunately, the generation that destroys the environment may not be one that pays the price. When forests are cut, for example, leaves dry up slowly and so it is lost a little at a time. It is the future generations that will confront the consequences of today's destructive activities of the current generation. Sometimes it is people far away from where the destructive activities are that pay the price. For those causing the trouble, it is more convenient to postpone concern for environmental problems to a later date when there will be no elections and when survival is not a priority. One of the issues that even the future generations will have to deal with is climate change, which the Kyoto Protocol was endeavouring to assist.

The responsibility to address the problems in good time for the common good of all calls for visionary political leadership. It also calls for will on the part of governments and corporate social responsibility on the part of the corporations and business partners. Individuals too have choices to make. Recently, I learnt that we each one of us need at least ten trees to take care of the Carbon dioxide we individually exhale. So there you are ! Where are your ten trees? If any one of you has not planted his or her ten trees you are using somebody else's trees. I have also been advised that I shall probably have to plant eight trees upon my arrival in Kenya to deal with the greenhouse gases that will be emitted as a result of my coming here to India. So it means every time I travel I have to plant some ten trees. More and more we should become conscious of the impact of our individual actions. This is what I am trying to draw your attention to so that we can see what we ourselves do, what kind of footprints we leave behind.

From where I sit, I call upon the people of the world to plant more trees and to protect forests and local biodiversity, including of seeds, of food crops, and the protection of standing forests. It is for this reason that in 2005 I accepted the role of goodwill Ambassador of the Congo forest ecosystem. This request came from ten governments in Central African region who decided to try to save the Congo Forest ecosystems which are threatened by both legal and illegal logging.

This is because the Congo forest ecosystem is the second largest forest ecosystem in the world, only second to the Amazon Basin forest ecosystem. Between those two and the South East Asia forest ecosystem which I recently visited in Brunei, these three are called or known as the 'three lungs' of the planet. The world needs these three forests; the world needs all forests wherever they are.

Recently, I visited the heart of Borneo in Brunei in South East Asia, and was impressed by the commitments of the government to work closely together in order to protect these forests. This is important, because while it is important to plant trees it is also very, very important to protect the trees that are standing.

These forests, and indeed national forests are especially important now that scientists have expressed their concern regarding climate change and its consequences. At least now we cannot say 'may be', 'perhaps'. Forests are major carbon sinks and sites of immense biodiversity, much of which is still to be discovered especially in the three forests that I have mentioned.

Indigenous forests in particular are also important because of the role they play to support livelihoods, especially of rural communities. For example forested mountains are catchment areas for water, which would otherwise flow downstream as flash floods that carry with them soils and nutrients needed for agriculture. Floods are also devastating to settlements and farms downstream. Human settlements need forests to support livelihoods, which cannot be sustainable without the services they get from forests, sometimes at long distances from their settlements. The United Nations Environment Programme (UNEP) recommends that each country should have at least ten per cent of its land covered with forests.

Many countries in the world that have their own land covered with forests and vegetation sometimes even much higher than ten per cent. In fact I have been to countries like Japan that has sixty five to sixty eight per cent. Brunei, when I was there recently, claimed they had seventy five percent of their country covered by forests. Now this is good when they do and conserve and enjoy a healthy and a clean environment, but sometimes the same countries that have their environment cleaner, healthier and landmass covered by large forests are the same countries that are involved in the logging of forests very far away from home. This disconnect needs to be addressed because the world is one and we need to protect not only the local environment

but the environment far away. The services that the Amazon basin is providing to us all on the planet is not far even though the forest itself, may seem to be very far from us. This is because while some resources like the huge forests ecosystems within the tropics may be very far, their services impact on us at distant places.

But there is constant pressure to sacrifice forests for human settlements, agriculture and industry. We need the forests, but forests do not need human settlements. Whatever options we must make, it is always better to be guided by the common good, not only of the present generation, but also of generations to come. Politically, it is more expedient to sacrifice the long term common good and the intergenerational responsibility for the convenience and opportunities of today. But morally, we are required to make the better options for the common good of all. We have a responsibility to protect the rights of generations which cannot speak for themselves today.

Perhaps, another way of putting it is to say that humankind needs a clean and healthy environment to sustain life, but the environment does not need humankind. This is as true today as it will be true many generations down the road of time.

Governments and corporations can do a lot to assist societies adapt and adopt lifestyles that are less dependent on fossil fuels and resources that are limited. Some of the doable initiatives to deal with climate change include consuming less energy and other limited resources, planting trees, protecting those that are standing, investing in research and development of other sources of energy like wind, solar and hydropower. Nuclear power has enough controversies especially with respect to the issue of security and safety and that debate will continue. But there are many options we can turn to. Recently during a visit to Japan, I learnt about a Buddhist concept called *mottainai*, which calls for respect for resources, gratitude and calls not to waste resources. The next time I visited Japan I was very impressed because the Minister for Environment (Koike) who was a woman, I guess only a woman would have done so, had decided to create what in Japan they call *furoshikis*, which were made from recycled materials like plastic. This is a *furoshiki* from Japan, which were made from recycled materials like plastic. This is a *furoshiki* from Japan, they use these cloths for tying gifts, and once a gift is tied and you get the gift you return the *furoshikis* so that they can use it again. This is what they did when they were not so affluent as to become a throw away civilization. But the Minister took this idea

of *furoshikis* and *mottainai* and decided to have them produced from recycled material. You would never know it. And this is what people in India, in Japan and other developed countries, can do with the technology, recycling material instead of wasting it. And so I thought about the old concept of the three Rs, reuse, reduce, recycle. And I thought that this is a very good cause because at home in Kenya we are actually trying to use that campaign to get rid of very thin plastics that we throw into the wastepaper basket the first time we use them. They land up in dump sites all over the city in drainages so that when it rains the streets are flooded. And because we are in a country where we have malaria, may be we are encouraging malaria because we provide excellent habitats for mosquitoes to breed when these plastics are thrown into the environment. Whenever it rains they collect little bits of water and these are excellent habitats for breeding mosquitoes. So we took this concept of *mottainai* and we have been carrying out a campaign jointly with the Japanese and I am extremely delighted about how that campaign has taken off.

At an individual level we can do a lot to conserve the resource we use. For example, we can learn to conserve water. In the morning we wash and when you live in a country where there is a lot of water it is very easy for you to open the tap and let it run because you are not concerned. But sometimes, even if you don't need to conserve, you train yourself to conserve in order to draw attention to yourself that you are dealing with a resource that is extremely scarce and in many parts of the world people do not have access to clean drinking water. And if what is happening to the world continues, water is indeed going to be one of the resources that we are going to wage war over. When there is not enough water and especially with the climate change threats and the melting of snows and ice from our mountains, water is one of the resources we need to watch to see how this linkage between conflict and resources translates itself. There are many conflicts in the world over forests and once people are encouraged to go into the forests, or once people are encouraged to clear cut indigenous forests and establish plantations of exotic species such as the eucalyptus, problems arise. When the Eucalyptus were introduced into Kenya, they were introduced to dry up marsh grounds, water logged areas in order to make the land available for agriculture. They were baptised by the local people, "water drinkers". And today, they have drunk virtually every drop of water from the land and they are still extremely popular because of the way

they look, the way they grow very tall, the way they grow very fast. But we have refused to accept that as they grow at that rate they are taking much of the water which we, the human and our livestock are trying to access. So I have a big campaign to win. The constituency I represent borders a forest. And my constituents are constantly telling me that if I don't give them water they would not vote for me. But also they are telling me that if I don't allow them to go into the forest and cultivate the forest they will not vote for me. So I have no alternative because whichever way I turn I may not be voted in. But I have told them that whatever happens I will not allow them to go into the forests, because once they go in and they cultivate – even though they say they want to go in and cultivate – food crops and plant trees – they are going to plant exotic plantations of pines and eucalyptus and I have been trying to educate them and my fellow Kenyans that plantations of exotic species are not forest. They are farms of exotic species of trees. And these exotic species do not allow any other vegetation to grow. So they kill all the biodiversity that is endemic to that area. They may look very beautiful but they are doing a lot of damage to our local biodiversity and because they clear cut to aid growth, when it rains water does not percolate into the ground because the ground is as hard as a rock. So water runs off. The result is you are left with the mountains that have no water to live. And so the rivers either decrease in volume or eventually dry up. I do not know whether you people have experienced anything of this sort, but in my part of the world when we have seminars and I ask people all those of you who know a river that used to be a big river, and now it is stream put up your hand, I sometimes get, I am not exaggerating, more than sixty per cent of the people who put their hands up but even when they step out of their homes they have already forgotten and they want to plant exotic species, like the water drinkers. I wish to emphasise the fact that protecting the environment and promoting cultures of peace takes patience, it takes commitment, it takes persistence. Too often we want things to happen yesterday. We have to be patient, we have to be committed and we have to stay on course. It has to become a conscious and a deliberate struggle to change our mindset to include the environment into our equation of peace and security. We need to bring into our discussions and into our mindset the issue of equity. It is not possible to live in peace if we do not have equity. It is not justice to have a large number of people living in utter

poverty while others are living in utter affluence. Somehow, sooner or later, we must change our mindset so that we can look for a balance. In conclusion, let me share with you a short story that reminds me about that need to take action, the need for patience, the need to be committed and the need to be persistent. It is story of a hummingbird.

I actually heard this story in Japan.

Well there was this huge forest that caught fire and all the animals in the forest decided to leave the forest and save themselves. They came to the edge of the forest and watched the fire from a distance: overwhelmed and disempowered by the raging fire.

Except this hummingbird, which said, 'I am going to do something about the fire!'

And so it flew to the nearest stream and brought a drop of water in its beak and put it on the raging fire! It flew fast back and forth, every time bringing a drop of water in its beak and putting it on the fire. In the meantime the other animals were watching in dismay as the fire raged. "What can you do?" the other animals wondered aloud. "You are too small, you cannot put off such a fire!! Come and join us and watch the fire!!"

Unmoved, the hummingbird kept its focus, maintained its commitment, remained focused and responded without losing patience or speed.

"I am doing the best I can!" And that is what we are all called to do. No matter who we are, no matter where we are, no matter how overwhelmed we may be, we must always do the best we can.

And that is what we are called to do: the best we can!

नाजायज शिकारियों के तौर तरीकों के सम्बन्ध में कुछ महत्वपूर्ण जानकारीयाँ

आनन्द सिंह नेगी

चन्द असामाजिक तत्वों द्वारा अपने कुत्सित कष्टों से प्रकृति के अनेक जीव जन्तुओं के अस्तित्व को खतरे में डाला जा रहा है। आम आदमी की इस ओर उदासीनता और अज्ञानता से इन तत्वों को निर्बाध रूप से ऐसा करते रहने का साहस मिलता है, जिसका प्रतिफल होता है प्राकृतिक असन्तुलन। किसी भी प्रजाति का लुप्त होने का अर्थ है उस पर आधारित 10 से 20 अन्य जीव या वनस्पति प्रजातियों का लोप होना। यहाँ कुछ ऐसी जानकारीयाँ दी जा रही हैं, जो वन कर्मचारियों व वन्य जीवों की रक्षा में लिप्त कर्मियों के लिए तो महत्वपूर्ण हैं ही, साथ ही आम आदमी के लिए भी महत्वपूर्ण हैं क्योंकि हम थोड़ा प्रयास कर इन प्रकृति व देश के दुश्मनों को पकड़वाने में मदद कर सकते हैं।

1. देश में मुख्यतः दो जनजातियाँ नाजायज शिकार के लिए जिम्मेदार मानी जाती हैं।
बावरिया — मुख्यतः उत्तर भारत में सक्रिय हैं।
बहेलिया — मुख्यतः मध्य व दक्षिण भारत में सक्रिय हैं
2. कटनी (मध्य प्रदेश) में लगभग हर वर्ष बहेलियों का वार्षिक सम्मेलन होता है, जिसमें मुख्यतः नाजायज शिकार के नए तौर तरीकों की जानकारी दी जाती है तथा वन विभाग, पुलिस तथा अन्य सरकारी विभाग से कतिपय राज्यों में होने वाले खतरों से सभी को आगाह किया जाता है। उनके निशाने पर जो जंगली जानवर रहते हैं, वे जहाँ कहीं भी पाए जाते हैं, क्षेत्रों में वन विभाग द्वारा क्या सतर्कता बरती जा रही है और कहाँ गश्त या निगरानी में कमी या लापरवाही है, उसका भी उन्हें पूर्ण ज्ञान रहता है, जिसको वे आपस में एक-दूसरे से बाँटते हैं।
3. अब बहेलियों का रूख भी उत्तराखण्ड या उत्तर भारत के अन्य राज्यों में होने लगा है।
4. 'वाइल्डलाईफ प्रोटेक्शन सोसाइटी ऑफ इण्डिया' द्वारा उक्त जातियों के कुख्यात शिकारियों को सूचीबद्ध किया गया है, जिसमें 260 व्यक्ति बावरिया जाति के तथा 200 व्यक्ति बहेलिया जाति के हैं।
5. इनके पास बन्दूकें भी मौजूद हो सकती हैं।
6. पत्र/मालवाहक (कोरियर) का कार्य उक्त जातियों की महिलाओं द्वारा किया जाता है। जानवरों की खाल या अन्य चीजें अपने बदन पर लपेटकर ऊपर से धोती पहनती हैं।
7. उक्त नाजायज शिकारी ध्यानपूर्वक विभिन्न वन क्षेत्रों में होने वाली गश्त पर निगरानी रखते हैं और अगर गश्त बन्द हो या लापरवाही से हो रही हो तो उसका फायदा उठाते हैं। रात्रि को भी वनों में अपने काम को अंजाम देते हैं। अतः रात्रि गश्त अति महत्वपूर्ण हैं।

8. शेर, गुलदार आदि को मारने के लिए स्प्रिंग ट्रैप (चूहेदानी जैसा बड़ा फंदा) का प्रयोग करते हैं, जिनका निर्माण अधिकांशतः हरियाणा में किया जाता है।
9. जब स्प्रिंग ट्रैप जंगल में लगाते हैं, तो उसको एक एन्कर; लोहे की मोटी चेन के पीछे एक छोटी छड़) द्वारा मजबूती से बाँधा जाता है। एन्कर को जमीन में दबा देते हैं। अक्सर एन्कर को जंगल में ही गड़ा हुआ छोड़ देते हैं और ट्रैप को काम करने के बाद उठा ले जाते हैं।
10. जानवर के फंदे में फंसने पर उसकी खाल उसी वक्त निकाल देते हैं, जब तक जानवर का शरीर गर्म रहे ताकि खाल पर मांस के अवशेष नहीं के बराबर रहें।
11. फंदे में फंसे बड़े जानवर को मारने के लिए बन्दूक का प्रयोग भी कर सकते हैं।
12. अगर जंगल में कभी भी गश्त के समय या कैम्प करते हुए किसी जानवर के चिल्लाने की आवाज आती है तो तुरन्त उस दिशा में जाकर जाँच पड़ताल करनी चाहिए। चूँकि जानवर फंदे में फंसा हो सकता है।
13. गश्त के समय बावरिया या बहेलिया लोगों के बारे में जानकारी करें व उनके कैम्प कहाँ हैं, उसकी पूरी छानबीन करें। ये लोग जब किसी ग्राम सीमा में कैम्प करते हैं तो ग्राम रजिस्टर में उनका हवाला दर्ज किया जाता है, उसकी भी जाँच करें व रजिस्टर में दर्ज करने के लिए भी दबाव डालें। उनके पास यदि असलहे (Fire Arms) हैं तो उनके लाइसेंस की भी जाँच करें।
14. अजनबी लोगों के पास खाल निकालने के औजार या (Jaw trap) फंदे के पुर्जे आदि हों तो तुरन्त सतर्क हो जाना चाहिए और गहन छानबीन करनी चाहिए। ऐसे औजार व पुर्जे अक्सर गंदे कपड़े की पोटली में छिपाए रहते हैं।
15. शेर व गुलदार के नाखून अक्सर कुमकुम की डिबिया में छिपाए रखते हैं।
16. जानवरों को गर्मी के मौसम में पानी के छोटे-छोटे तालाबों में जहर देकर भी मारते हैं। ऐसे पानी के स्रोतों के आस-पास जानवरों की पगडंडियों को झाड़ झांकार से बन्द किया जाता है और केवल एक ही रास्ता जो पानी की तरफ जाता है, खुला रखा जाता है। गश्त के समय इस ओर ध्यान देना चाहिए तथा पानी की पी0एच0 की जाँच लिटमस पेपर से करनी चाहिए। पानी में यूरिया मिलाने से भी जानवरों के लिए धातक हो सकता है। सात (7) या इससे अधिक पी0एच0 धातक हैं। ऐसी दशा में लिटमस पेपर को ऐसे पानी में भिगोने पर उसका रंग गहरा हरा हो जाएगा।
17. नाजायज शिकारी अपने पास बोरिक पाउडर भी रखते हैं। अतः मिलने पर सतर्क हो जायें।
18. इनके पास लाल या पीले निशान की शीशी भी हो सकती है, जिस पर **MONOCROTAPHOS** लिखा होगा। यह भी जहर है जो जानवरों को मारने में प्रयोग होता है।

19. जानवरों को बिजली के झटके से भी भरा जाता है । गश्त के समय यह भी देखना चाहिए कि बिजली की लाइन अधिक नीचे तो नहीं झुकी है, या उस पर जंगल के अन्दर या इर्द-गिर्द कटिया तो नहीं डाली गई है । बिजली के झटके से मरने वाले जानवर के शव परीक्षण पर हृदय में एक बड़ा खून का थक्का मिलेगा । जानवरों के बाहरी हिस्से पर जले का निशान हो सकता है और अन्दरूनी महत्वपूर्ण अंगों पर सुई की नोक के बराबर छोटे-छोटे खून के थक्के नजर आयेगें।
20. पूरे देश में बाघ(Tiger) का शिकार 1972 में प्रतिबन्धित कर दिया गया था। भारत में बाघ की हड्डियों का नाजायज व्यापार सर्वप्रथम उत्तर प्रदेश के दुधवा राष्ट्रीय उद्यान में वर्ष 1986 में पकड़ा गया था । बाघ के नाजायज शिकार में संलिप्त कटनी (मध्य प्रदेश) के गैंग में 262 व्यक्तियों की जानकारी मिली है। इसी तरह समलखा गैंग में भी 100 व्यक्तियों की जानकारी है ।
21. नाजायज शिकार के मामले जब न्यायालय में भेजे जाते हैं तो वन्य जीव संरक्षण अधिनियम की धारा-2 का भी केस में उल्लेख करना आवश्यक है, जिसमें परिभाषाएँ दी गई हैं । जपती की कार्यवाही के समय मुल्जिमाओं के बयान में यह भी दर्ज करना आवश्यक है कि उनके पास अमुक वस्तु का **Ownership Certificate** है या नहीं ।

महत्वपूर्ण

उपरोक्त सावधानियाँ/जानकारीयों गश्त के समय अति महत्वपूर्ण हैं । गश्त का कोई विकल्प नहीं है । जंगली जानवरों का अन्धाधुन्ध शिकार दिन-प्रतिदिन हमारी नाक के नीचे हो रहा है, परन्तु छोटी-छोटी सावधानियों/जानकारीयों के अभाव में और गश्त में लापरवाही के कारण वन कर्मचारी चूक जाते हैं । छोटे जानवर जैसे जंगली बिल्लियाँ, सियार, नेवले, सांप, कछुए, खरगोश, छिपकलियाँ, सिवेट, सल्लू साँप (Pangolin), चिड़िया, तितली आदि प्रकृति के सन्तुलन बनाए रखने के लिए अति आवश्यक हैं, परन्तु अन्धविश्वास पर आधारित दवाओं, टोटकों आदि के लिए चन्द लोगों द्वारा इनको मारकर सन्तुलन बिगाड़ा जा रहा है । अतः विशेष सतर्कता, सावधानी व कर्तव्यपरायणता की आवश्यकता है, तभी प्राकृतिक सन्तुलन को ध्वस्त करने के इन कुत्सित कृत्यों पर लगाम लग सकेगी ।

World of Birds

*Bhagat Singh

The "World of Birds" is the most beautiful and colourful gift of nature to mankind. Their exuberant vitality enchants us, their mysterious lives tantalize us, and their bewitching melodies uplift our hearts and minds. Their brilliant colours, innumerable forms, streamlined shapes, gorgeous fights and playful acts, full of fun and frolic, bestow upon these magnificent denizens of the sky a place of honour and pride among the comity of living on our planet. Since time immemorial, birds have had a close relationship with human population. The whistling tunes of Thrush, sonnets of Bulbul, mournful lament of Hoopoe, hooting of Owl, out-cry of Red Jungle Fowl, chattering of Myna, drum-beats of Barbet, ascending notes of Koel, emotional outburst of Chatak, distressed cry of Chakor, maddening call-notes of Papiha, melodies of Shyama, piercing scream of Peacock, ornamental dance of Saras, fluting tunes of Robin, lyrics of Madhuka (Lora), rhythmic walk of Hans (Swan), and a great variety of fun-filled and joyous acts of a large multitude of birds have aroused emotions and passions in human hearts and influenced human folklore and literature.

It is true that by bird watching we can not earn our livelihood, but if we cultivate the hobby of bird watching, it would certainly prolong our life; for it would stimulate our heart and mind to step-in into the all pervading serene wilderness, where we can breathe fresh air; seek peace and tranquility; break the dull and drab monotony of the present day city life; where we can relax our nerves in the natural setting, free from tension and pollution; and soothe our depressed feelings in an environment, that throbs with the fragrance of wild flowers; with the melodious songs of a great variety of birds, with the playful acts of a large number of animals; with the exhilarating dances of lofty trees; with the glimmer of trickling water springs; and the enchanting tunes played by the orchestra of numerous waterfalls descending down the forested hills.

Further more, birds play a significant role in the conservation of nature. Nature-where tranquility reigns; where mind illuminates; where soul enlightens; where heart throbs; where splendour glows; and where scenic grandeur animates transcendental bliss. Nature-which is all soothing and sublime.

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People, nowadays, are becoming more and more conscious that they can not live a healthy life, independent of their natural environment. Birds, in this context, perform an invaluable function. They warn us, by their health and well-being, of the dangers that threaten us in the environment. Several species of birds have become extinct or miserably dwindled in numbers, as a result of pesticide residues in the environment. This warns us that we too are absorbing all kinds of chemicals into our own bodies, which have unpredictable side effects, fraught with dire consequences to our healthy growth. This warns us that this is high time that we must take effective and concrete action to stop all toxic substances getting into the environment. If we are able to put a halt to this terrible decline, we will have the satisfaction that we are helping ourselves as well as these magnificent winged creatures.

India has abundant share of the natural splendour of the earth; and more than its share of bird wealth, both in terms of diversity and population. Hills covered with lush green vegetation; vast expanses of grasslands, dotted with clusters of trees and shrubby bushes; and wide open glades with luxuriant growth of green foliage provide eternal home to multitudes of birds. The wide spectrum of bio-geographic diversity of this region is fully reflected in its spectacularly rich birdlife.

Most species are resident, and stay in a region round the year, subject to, of course, seasonal movement; while few species, which winter in South India, migrate to Himalayas to spend their summer months,. On the other hand, some strong flying birds, such as Woodcock, Indian Blue Chat, and Pied Ground Thrust which are resident of the Himalayas, take long journeys to find analogous habitats in the Nilgiri Hills in South India to spend their winter months in warmer regions, and return to their original areas in the Himalayas in summer, where they breed and raise their young.

Unrivalled in scenic grandeur and natural splendour, India has drawn world wide attention for being the heavenly abode of most of the beautiful and colourful birds, such as, Barbets, Minivets, Tits, Finches, parakeets, Woodpeckers etc.

Most of the water reservoirs, rivers and lakes, spread over the entire Indian Union, provide shelter to many species of birds, which migrate from distant places in Central Asia, Europe and China, to the Indian sub-continent in winter.

Since India has a tremendous altitudinal variation, the climate of this country greatly varies from tropical heat to arctic cold of the snowy

mountains. Because of this drastic change in climatic conditions, there is a different type of plant life in different parts of this country. The birdlife primarily depends on the type of vegetation that exists in different climatic zones, which can be broadly divided into (1) Tropical and Sub-Tropical (2) Temperate, and (3) Alpine.

Whenever the sun shines warmly, the old male birds tune their pipe and enliven the neighborhood with their songs. The young also begin to sing. With the advent of the spring, the blossoms peep forth in every part of the budding woods and hundreds of plants banish the dismal appearance of winter. The nature clothed in spring, provides happiness and abundance to all the creatures. Then the songbirds perched on the tops of detached trees, give vent to their passions. Their songs never fail to enchant the listeners.

During the love-season, some songbirds pour out their feelings with heightened passion. Like proud musicians, they swell their throat, spread their tail, droop their wings and lean alternately to the right and left. The fluting tunes of some songbirds are among the most exhilarating sounds of nature. Many small birds, like Warblers, sing in gentle, continuous trilling manner. It appears as if they speak in verse or give expression to their passions in song.

Conservation of birds is a matter of great concern. Each one of us owns the responsibility to conserve and protect the miracles of birdlife, that thrives on our planet. We can do this by knowing as much about these winged creatures as we can.

All of us need to associate ourselves with the future of birdlife, and the unspoilt beauty of the magnificent land of our country. We need to appreciate the beauty and the variety of birds, and cooperate honestly in the endeavour to protect these wonderful winged creatures of our land. Concerted efforts are needed to arouse the interest of the people at large in the subject of birds and bird watching.

Bird Photography

Bird-photography is a challenging task. Even if one is whole-time devoted with the most ardent will and determination, it is not possible in one's life-time to take clear and sharp pictures of all the species of birds that are found the year round even in a small area of about 300 sq.km. Some of the reasons are:

- (i) Birds are extremely shy of human beings. The moment one attempts to approach them, how so much cautious, quiet and careful one may be in his movement; the birds instantly take

to wings. The birds have been blessed with keen eye-sight and with an acute sense of hearing.

- (ii) Many of the birds are quite small in size, and generally remain hidden in bushes and leafy trees. Even when sighted, they remain partly screened amongst leaves, twigs and branches.
- (iii) Birds, in general, do not remain at a place. For want of food and for fear of danger, they move swiftly from twig to twig, from branch to branch, and from tree to tree, up and down. Thus, they hardly provide any time to the photographer to click his camera.
- (iv) Bird-photography primarily depends on day light conditions, particularly when one attempts to photograph birds in their natural habitats. Apart from the weather conditions that remain uncertain for most part of the year, the drifting shadows, with the movement of the sun in the sky, seriously disturb the light conditions, reducing considerably the chances of clear and sharp pictures.
- (v) In jungles with dense undergrowth, particularly in hilly areas, the movement of the photographer is not only grossly restricted, but is also fraught with dire consequences for his life. I, myself, is a witness to an incident in which a photographer from England, who was a keen bird-watcher with years of experience at his credit, lost his life at the hands of a tiger in the Corbett National park, while he was attempting to photograph a horned forest owl perched on a giant leafy tree. The unfortunate victim had glued his eyes on to the owl, unmindful of the stripped beast lurking in the nearby bushes.
- (vi) Most of the birds migrate to distant lands for breeding, nesting and in search of food. Their power of flight enables them to overcome barriers that restrict the movement of the photographer. Even among the resident birds, considerable altitudinal movement takes place to escape the rigors of the seasons, particularly the winter. Migration is a periodically alternative swing between two areas that promote optimum living conditions, such as food, water etc. at respective seasons. Some of the birds, who are endowed with strong and sustained flights, migrate to long distances to escape extreme climatic conditions. It is not easy to locate them for months together, particularly in inhospitable hilly terrains.

- (vii) The constraint of time is another major obstacle in bird photography. In spite of best efforts and toiling for days together, success eludes the photographer in 99 out of 100 attempts.
- (viii) Lack of minimum civic facilities, such as, accommodation, food, water and security etc. in remote and inaccessible areas in Indian jungles, particularly in the interior regions of the Himalayas severely hamper the work of bird-photographers. Even if one gathers enough courage and summons boldness to face hazards, he would not be at all certain about the final outcome.

To conclude, I must put on record that birds are the most beautiful and colourful ornaments of our forests. They adorn our homes, beatify our gardens, and entertain us with their sweet melodies and gorgeous flights. They deserve our love, affection and kindness.

Urbanization in Non-human Primates and Comparison with human being

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Introduction

Man evolved from the non-human primates (monkeys, apes and allies), through some two million years ago, and is indeed one of them. Although, human being is the highest, it is both natural and logical from the evolutionary point of view to seek an understanding of human behavior, especially in social relationship. One of the most significant developments in human relationships in the last twelve thousand years, after the advent of agriculture and especially after the growth of industrialization has been the aggregation of vast numbers of humans in cities. And this process called urbanization has brought in its own problems. Simultaneously with the development of human urban settlements, a few non human primate species have also become urbanized, with the difference that while man created his own city environment by building homes and other requisite, the non-human primate species which took to urbanization simply usurped the existing ruined or living human dwelling facilities and adopted themselves to live in such new environment. This paper concerns the new characteristics acquired by urbanized primate populations and compares them with the unurbanized counter parts (i.e. rural and forest-dwellers) and with man in aspects such as crime/infanticide, cannibalism etc.

Urbanization in non-human primates

Man-monkey association is as old as man's own existence. Of nearly 225 living species of non-human primates, three Indian species have become urbanized. They are the rhesus macaque (*Macaca mulatta*), the bonnet macaque (*M. radiata*) and the common/Hanuman langur (*Semnopithecus entellus*). The rhesus macaques

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live in northern India. The bonnet in south and the common langur is widely distributed and the most adaptable species found all over the Indian sub-continent. Both the macaques, however are so thoroughly urbanized that they are as entirely at home in cities as they are in their original forest homes. The Hanuman langur have also developed fairly close relationships with man, but have not become truly urbanized.

In the Indian context the man-monkey relationship is remarkable. On one side people consume blood and flesh of monkeys as medicines, trap, kill and eat them as food, on the other side people keep them as pets, train them to play, feed and protect them. Urbanized populations are provisioned frequently due to religious sentiment of people. So human attitude towards monkey differ from area to area and species to species. For example, many tribals living in the interior of the forest trap, kill and eat monkeys irrespective of the nature of species. Likewise, monkeys are not liked in the areas of massive agriculture, horticulture and other plantations since they Raid and damage the crops and orchards. In such areas they are considered pests. (Roonwal and Mohnot, 1977). In yet another situation monkeys have become commensalisms and are competitors of human being in and around villages, towns and cities. These are "Urbanized monkeys".

The rhesus macaque (*Macaca mulatta*, Zimmermann)

The rhesus macaque, commonly known as 'Bandar' is medium-sized monkey with a stout body and a relatively short tail. It occurs in South and South East Asia-from eastern Afganistan via Pakistan, Northern India, Nepal, Bangladesh and Mymnar, East to Thialand and Vietnam and small pockets in Southern Tibet. Its sociobiology has been studies by a number of researchers (Kaufmann, 1967, Lindburg. 1971, Roonwal, 1976). It lives in groups composed of 8-180 members. These groups are generally bisexual (i.e. comprising adults of both sexes) and multimale (having several adult males). There is a central and a peripheral grouping of males, the former being dominant over the later. A dominaree helraNKy among males occurs, with an alpha or the most dominant male and

two or more less dominant ones. Females also show Rank order among themselves.

In many of the northern Indian cities, any observer can easily get convinced as to how the rhesus macaque has become completely urbanized. It is entirely at home on roof tops, in temples and in railway yards. In the present study we are more concern to know if there is any difference between city-dwellers and forest-dwelling monkeys, what they are and how the natural behavior changes take place. It has been observed that the urban and forest-dwelling groups differ markedly in food preferences, foraging and roosting habits, behaviors at the feeding site, aggression, curiosity etc.

The forest-dwellers live principally on leaves and fruits while urban monkeys live on cooked human food (chapaties, sweets, roasted gram, groundnut etc.) as well as on fruit and vegetable stolen from shops and houses. Forest-dwellers obtain food naturally and fearlessly in nature where it is easily available. The city-dwelling animals have to steal or pilfer it from food, vegetable and fruit shops in open market and domestic kitchens. They are constantly in tension with citizens who chase them away and many a times beat them up. However, at the same time, the religious-minded people provision them fruits and cooked food. And therefore, the city monkeys are alert, suspicious and bold.

The roosting sites are not fixed for forest-dwellers, they have some preferred sites but they can roost for the night in any convenient tree near which they happen to be at the end of the day. On the other hand, city dwellers have fixed sleeping sites, such as ruined houses and temple roof-tops. At the feeding place, city - dwelling monkeys show less aggression among themselves, but are basically more aggressive in comparison to forest-dwellers. The greater basic aggressiveness of the urban monkeys may have evolved due to the more restrictive nature of the urban environment as regards space and the limited food supply, resulting in greater competition among themselves and man. The forest-dwellers are observed to be very shy, retiring nature and are afraid of man, when trapped and put in cages, while city-dwellers are bold and are not

afraid of human proximity. The former show less curiosity and less desire to explore than the city-dwellers.

The bonnet macaque (*Macaca radiate*, E. Geoffroy)

The bonnet macaque is a south Indian monkey which is found in the whole of peninsular India north to Satara. Its crown hair are arranged like a cap or bonnet on the head, with the hairs radiating in all directions. It is smaller in body size than rhesus macaque and has a relatively longer tail, almost as long as the head and body. The sociobiology of this species has been studied by several researchers (Parthasarathy, 1972, Sugiyama, 1971, Rahaman and Parthasarathy, 1969, Simonds, 1975). The bonnet macaque prefers rural and sub-urban areas with tall banian and other trees and is not an animal of the deep, thick forest. However it is equally at home in cities, temples and railway yards, and is the southern Indian counterpart of the north Indian rhesus monkey. The food habit of bonnet macaque in both forests and cities are similar to those of the rhesus. It lives in groups of some 7-80 individuals, groups are multimale and bisexual. Occasionally, small all-male groups and solitary males are found. The differences in habits and behaviors of city-dwelling and forest groups of bonnet monkeys are also more or less similar to the rhesus macaque.

The Hanuman langur (*Senopithecus entellus*, Dufresne)

The Hanuman langur or common langur is large, sleek, black-faced, long tailed monkey found throughout the length and breadth of India, and spreads over into southern Tibet and Nepal in the north, Bangladesh and Mymnar in the east and Srilanka in the south. Due to having long tail, it's name 'langur' or 'langoor'.

The animal has been well studied by reiveral researchers for over last 40 years (Jay, 1963, Sugiyama, 1965 and 1971, Mohnot, 1971 and 1974, Hrды, 1974 and 1976, Mohnot et. al, 1981, Winkler, 1981, Sommer, 1985, Agoramoorthy, 1987, Rajpurohit, 1987, Borries, 1989, Srivastava, 1989, Changani, 2000, Bhaker, 2002, Rajpurohit, 2004 and 2005, Rajpurohit et.al 2006). The common langur lives in small to large groups varying in size from 7 to abort

125 individuals, Groups are generally of the bisexual type and are either unimale or multimale, All male bands are also found. It lives in all kinds of ecological situations, ranging from dense and hill forests to open scrub, and open, rocky, xerophytic areas to rain forests, from sea level to high attitude of about 4000 m in the Himalayas. Although many groups live on the outskirts and within city areas of Jaipur, Jodhpur and Ajmer, they have not become truly urbanized as the rhesus macaque. Langurs also raid regularly the houses, roof tops, crop fields, orchads or kitchen gardens in the urban environment. At many of the sites, the religious-minded citizens regularly provision the langur with cooked food and fruits and vegetables. They have developed close relationship with man and are fearless.

Infanticide in langurs

Although isolated cases of infanticide have been reported in some 6-7 species, including the prosimians, macaques, boboons and chimpanzees, it is only in the Hanuman langur, that infanticide has been observed as a regular and normal feature in natural populations (Hrady, 1974, Mohnot, 1971, Sugiyama, 1965 and 1966, Sommer and Mohnot, 1985, Agoramorthy and Mohnot, 1988, Ross, 1991, Rajpurohit et. al. 2003) A newly changed male, snatches away the infant, bites it viciously and leaves it dying. The mother, and occasionally one or two other females of the group, try to chase away the attacking male, sometimes succeed. The attack is premeditated and is not mounted on the spur of the moment. For days and sometimes weeks, the male stalks the intended victim and tries out the attacks, until he succeeds. The infants so killed are usually under 3 months old, but sometimes yearling is the victim. Infanticide seems to sexually stimulate the mother who comes into heat a few days after the event and copulates with the killer male or with other males. However not all the new resident indulge in this practice, about 40% of the new residents have been observed non-infanticide (Rajpurohit, 1987). The sexual hypothesis is also not completely valid as male has not been observed killing only male infants. Rajpurohit et. al. (2003) suggested that new

resident at beginning of his tenure would like to exhibit the most competence and murder/infanticide is one of such important show to let all the group members to realize and recognize him the most potent and new resident.

Discussion

The urbanization process

Any adaptation in primates including man that may have arisen in response to true urbanization must have been acquired within the last 10-12 thousand years or so, when man started becoming urban and as cities began to arise. The urbanization of the only known two fully urbanized non-human primates (i.e. rhesus and bonnet macaques) took place in India. These two, and a third the Hanuman langur (also Indian) have become an intimate part of the Hindu culture of tolerance (Roonwal, 1977). It is obvious that, within a species urbanization did not occur just once, but several times (and step by step). As a small village becomes a town neighbouring groups of primates gradually become adopted to live in urban conditions and like humans they acquire new habits and behavior patterns. This process was repeated for another city and for new population groups, and so on. Thus, for example primate urbanization in Jaipur cannot be more than 280 years old (the city was founded in 1728) and in Jodhpur it cannot be more than 500 years old (as Jodhpur city was founded in 1459 ad by Rao Jodha), whereas in ancient cities like Ayodhya and Varanasi, it could well have begun a thousand years ago or earlier.

The so called urbanized non-human primates (i.e. rhesus and bonnet macaques and Hanuman langurs) are always a nuisance, and also damage crops and orchards. The Hindu belief in the sacredness of all life and the weaving of monkeys into ancient Hindu mythology and literature have helped to create a climate of tolerance. Man has of course, played a direct and important role. Man can easily exterminate macaques and langurs from cities. But he would rather allow them to wander the streets as if they own them, or they would suffer frequent losses or put gauze doors to prevent monkeys

getting in. However, all primates do not have the same capacity to become urbanized. This is clear in case of Hanuman langur. For centuries it has had the same opportunities as the rhesus and the bonnet macaques, but has never become fully urbanized as these two macaque species.

Comparison with Man

Man has created for himself an ecological setting, as well as social and psychological settings, to suit his physical and mental needs. Some of these creations have gone out of control (e.g. overcrowding, insanitation), but being highly adaptable, man continues to tolerate them and even thrive in them. The result is overpopulation. Such a state has not yet arisen in the urbanized non-human primates. They have also acquired new adaptations, and for instance, no increase in fighting, and no sign of crime or other abnormal types of behaviors. There is also no marked change in social organization or sexual habits. Both wild and urbanized macaque females come into estrus only at certain time of the year and will receive male only then, a fact which restrains excessive breeding. In contrast, women are receptive and fertile the year round, an ability which results in greatly increased breeding capacity. This fact also implies for Hanuman langur living in and around Jodhpur. The Human population increased from 150000 in 1977 to about 10,00,000 in 2005, while the langur population here became 1900 animals in 2005 from 850 in 1977 (Rajpurohit et. al. 2006). Whether the urbanized macaques and langurs, with food abundance and social security, acquire an year-round sexual capacity in the next ten thousand years is a matter of speculation.

Non-human primates are on the whole peaceful. And this peace is largely archived between groups by each group having its more or less well defined home range or territory, and within a group by a well established system of dominance hierarchies (Roonwal and Mohnot, 1977), the dominant members exercising ordering, peace-keeping and protective functions (usually by male). In contrast, man is basically a fighting, quarelling primate, prone to killing and even cannibalism. With greater urbanization his mentality

and ability to kill one another has increased. Like the non-human primates man can learn to live in comparative peace and amity. It needs lot of research and thinking.

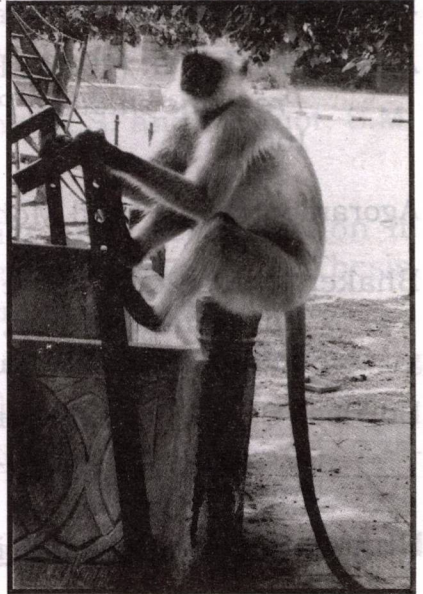
Summary

There are some 225 species of non-human primates, the rhesus macaque (*Macaca mulatta*), the bonnet macaque (*Macaca radiata*) and the common Hanuman langur (*Semnopithecus entellus*) have become urbanized. All three species are Indian- the rhesus macaque lives in northern India, the bonnet macaque in south and the common langur is widely distributed all over Indian subcontinent. In these non-human primates species, behavior differences have developed between urbanized population and forest-dwellers. The observation suggest that city-dwellers are more explorative, bolder, more cunning, more particular in setting with permanent roosting, more aggressive and more tolerant in food-sharing than the forest-dwellers.

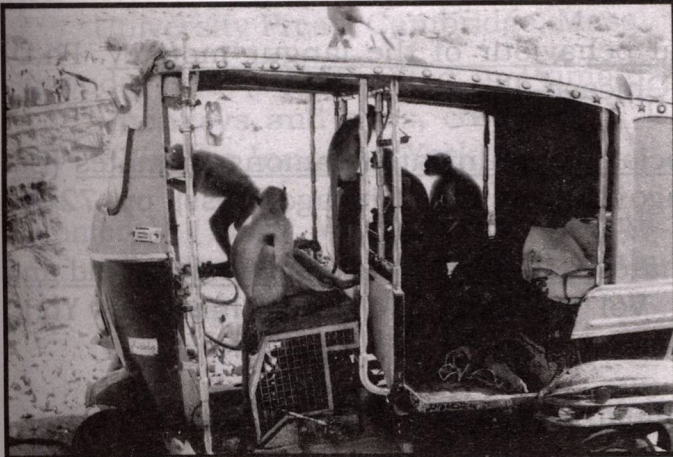
Non-human primates are on the whole peaceful, and peace is largely achieved between groups by each group having its more or less well defined home range or territory, and within a group by a well established system of dominance hierarchies. Crime is generally not seen in non-human primate. In an exceptional case, in the Hanuman langur (*Semnopithecus entellus*) and Chimpanzee (*Pan troglodydis*), infanticide by males is a normal feature. However, the city-dwelling langurs are comparatively less aggressive than the urbanized rhesus macaques. The process and consequences of urbanization are analyzed and discussed to compare with man. The growth of cities has occurred only within the last 15-20 thousand years, after the advent of agriculture and urbanization is probably not more than 10 to 12 thousand years old. And non-human primate urbanization has also occurred in that period. As a special case Hanuman langur in Jodhpur (Mohnot et.al. 1981, 1987) suggests that urbanization may take place fully in a short period of about 100 years.



A. Hanuman Langur group - artificial feeding
(Photo - G. Sharma)



B. Male langur - on the wall of an open well
(Photo - G. Sharma)



C. Hanumal langur group members in an auto-taxi
(Photo - G. Sharma)

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THE WHITE BLOODED FISH (*Chaenocephalus aceratus*)

**Dr.S.P. Singh*

Strange ! But true. A blood less fish zoologically known as *Chaenocephalus aceratus* found in very cold water of "Antarctic sea" which is covered with ice. This fish, therefore, is also called 'Ice fish', unique among the world of fish. There is no haemoglobin (The oxygen carrier) in this fish as respiratory pigment. Absence of haemoglobin provides the white color to the blood of this fish, therefore, it is also called white blooded fish or bloodless fish. This fish was first reported and photographed (given below) by Paul Richards (1970).



The white-blooded fish, *Chaenocephalus aceratus*, from the Antarctica.

This fish has no haemoglobin. The blood plasma alone can carry sufficient oxygen because of the high concentration of oxygen in the very cold water.

The oxygen concentration of the water in Antarctic sea is so high that the liquid plasma of the blood can absorb and transport all the oxygen needed by this fish. Actually, the life of this fish follow the principle of diffusion. Diffusion is the process of great importance in the movement

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of materials inside the living body and cells. Its mechanism is as follows.

If you drop a crystal of some soluble dye in a beaker of water, the color will gradually spread out from the region of the crystal until the water is colored at the top of the beaker. If the beaker is left undisturbed, the dye will become uniformly distributed throughout the water. There can not be any form of movement without the expenditure of energy. So, this movement of dye known as diffusion, must be accounted for some kind of energy. As the dye is dropped into the water, it begins to dissolve the outer molecules of the crystal come off the solid and are free in the water. Thus, they are more concentrated in the water immediately around the crystal than they are in the water farther moved from the crystal. The law of diffusion holds that there is a movement of the particles of dissolved substance from a region where there are more concentration to a region where they are less concentrated. Let us now try to determine the source of energy for such movement.

The movement of molecules or ions in diffusion is an expression of heat energy. All matter on the earth receives some heat energy. If we could ever attain absolute zero (-273°C), there would not be any heat energy and the movement of molecules would stop. Diffusion would not take place. We have never been able to attain this temperature (i.e., -273°C), however, so it is correct to say that there is always a movement of the molecules or ions in a solution. The amount of energy and the speed of movement of the particles are related to the temperature of the solution. If you have a solution with evenly distributed particles of the solute and you apply extra heat to one part of the solution (and prevent convection current), the particles of the solute which are warm will have greater free energy than those which are cool. Hence, the diffusion of these particles will be more rapid from the hot (warm) to the cool region. As a result, the solution in the cool region will become more concentrated than in the warm region.

This effect of heat on the amount of free energy of dissolved particles is demonstrated in the Ocean (sea) of the world. It comes as a surprise to many people to learn that the greatest concentration of marine animal life is found in the cold water of the northern and southern Oceans rather than in the warm water, the oxygen concentration is lower, because the oxygen molecules have a greater free energy and tend to pass out of the water into the air above readily. In cold waters, on the other hand, the free energy of the oxygen molecules is much lower and

oxygen remains at a higher concentration in the cold waters. Those who raise tropical fish know that the water must be kept warm but also that air must be bubbled through the water to keep the oxygen concentration high enough to supply the need of the tropical fish. Those fishes which can live in cool water do not need the air bubblers, they may die if the water is allowed to get too warm. On the basis of above principle of diffusion and availability of free energy, the Ice fish is living in the very cold water and there is no need of haemoglobin as carrier for oxygen.

Community participation in management of Keoladeo National Park

*Sunayan Sharma I.F.S.

Keoladeo National Park, popularly known as "bird paradise" is one of the world's most renowned wetlands. Presence of three major ecosystems namely the Wetland, Grassland and Woodland offers a diverse habitat for many animals and bird species. The Wildlife values for which the park is being managed are:

- ✓ **Around 370 species of birds and 375 species of flowering plants have been recorded** in this man-made wonder of 29 Sq.Km.
- ✓ The Park has one of the **world's most spectacular heronries, which hosts a large number of migratory and resident birds (15 Species).**
- ✓ The park serves as a **major wintering ground for migratory waterfowl from the Palaearctic region.** A large congregation of migratory waterfowl cover the water surface during midwinter. Of the 25 known duck species, eight are common.
- ✓ Keoladeo National Park is the **only wintering site in India for the central population of the rare and endangered species of Siberian Cranes.** The Siberian cranes come to the park between the middle of October and middle of November and leave for Siberia between the end of February and the middle of March.
- ✓ The park has the **last remnant patch of the Yamuna flood-plains.**
- ✓ The herpeto-fauna of Keoladeo National Park is very rich. The whole of Rajasthan state has only ten **species of turtles** while this small park alone has **seven species.** Besides this, there are five **lizards, thirteen snake species and seven species of amphibians.**
- ✓ **Mammal fauna** of the park is equally rich with **27 identified species.**

Envasion of p. juliflora has posed a serious threat to the fragile eco system of this world heritage site. Chief reasons responsible for this critical situation are:

1. **Acute Water Shortage in the park**

Keoladeo National Park receives water from Ajan dam which is situated adjacent to the park .This dam receives water from two rivers namely Gambhiri and Banganga. In last 10 years due to lot of constructions of various water harvesting & other structures the later has virtually seized to contribute to the dam.

After construction of Panchana dam over Gambhiri in Karauli district of Rajasthan, supply of water from Gambhiri also got adversely effected. The main problem aroused in 2003 when the dam height of Panchana got raised to increase its water holding Capacity from 450 to 2100 Mcft. As a result 2004 was a draught year for this park when the park received only 18 Mcft. water from Ajan. Fortunately heavy rains in the catchment of Ajan brought sufficient water in 2005 but 2006 was again a total draught year.

Shortage of water spread in the park provides great opportunity to *P.juliflora* seedlings to germinate and vigorous growth in its bigger plants.

It is mentionable that the optimum water requirement of this park is about 550 M.Cft. Up to 70s with so much of water for some period of time the entire park including its wood land area, spread over 11Sq.km, used to get inundated under water, during rainy season for considerable a period of time. This technique was extremely fruitful in keeping a check over undesirable growth of weeds like *P. juliflora*, as the seed of this weed used to get perished under such conditions.

In 80s, water supply to the park started reducing due to reasons mentioned above. Now taking advantage of the dry conditions in the park, *P.juliflora* started spreading & establishing fast in various areas of the park. Within a span of few years it succeeded in not only taking over the entire wood land but also infiltrated the unique grass lands of this park, spread over about 5 Sq.km area. Even the entire wetland spread over about 11 Sq.Km. got engulfed by this weed.

By 2006 the situation became critical.

2. Enormous coppicing power of *P.juliflora*

P.juliflora has vigorous coppicing power. The park management has been trying to kill the mother trees since long but could not succeed because of its enormous coppicing power. Even the burnt stumps of its trees sprout back with great vigor. There fore this weed can not be eradicated by adopting any technique other than uprooting every individual plant, big or small, of this spp.

3. Easy seed dispersal.

A. Winds are common in K.N.P.during summer when *P.juliflora* mother trees are seen laden with ripe seeds.

B. High number of mammal population in K.N.P.

The wild animals like Blue bull ,Chital ,Wild bore & the feral and domestic cows eat the ripe seed and deficit it in the entire park. The seed so treated in the animal stomach when falls on the moist floor of the park's soil ,along with the pallet dung, sprouts quickly.

Due to the above reasons P. juliflora has succeeded in posing a real threat to the survival of the unique eco system of this park.

How to counter this threat?

Uprooting of every individual plant of P.juliflora is the only solution to this problem. Several crore plants are standing in the park. Therefore uprooting especially of the mother trees require crores of rupees, which is very difficult to be arranged by the Govts.

Of course the trees with fuel wood value could attract some wood merchants/ contractors, who could agree to uproot the trees free of cost and even pay some price for the wood so obtained from the uprooted trees. This could be a solution to the problem but could not be practiced because of the strict prohibition imposed by the W.L. Protection Act.

As per the provisions of this act no profit can be earned through removal of any kind of produce (including weeds) from the Protected Areas.

Under such a situation the only remedy left was to get the trees uprooted free of cost through the neighboring villages. But it was almost an impossible task because of the peculiar temperament of the Bharatpur (rural) people. This was the chief reason responsible for failure of the efforts done by the park management in the past.

It is also mentionable that manual uprooting of trees is highly desirable comparing use of machines because machines are bound to damage the desirable plants also along with the undesirable trees. Manual uprooting of large trees of P.juliflora was a Herculean task.

In such a situation when P. juliflora had pushed the park to the height of degradation of its bio diversity, it was imperative upon the park management to take up this issue on top priority alike the water issue.

The park management took up the challenge of motivating the villagers.

K.N.P. is surrounded by 16 villages. Strategically RamNagar village was selected as the first village to start this new experiment.

The best Forest Guard was posted at Ram Nagar chowki, under which this village lies.

One Range Officer was deputed for this purpose alone, under the supervision of another senior range officer.

This team along with the personnel of the concerned Naka held number of meetings with the villagers of RamNagar.

They ultimately succeeded in motivating people to agree to uproot the P.juliflora trees in lieu of the wood so obtained from these trees.

An Eco Development Committee was formed on 15.2.07 by registering almost all the villagers belonging to various caste, creed, financial & social positions.

The work was started in front the RamNagar chowki & under strict supervision of the above forest personnel but with the instructions to guide the villagers.

The E.D.C. members were grouped family wise and each family was allotted a 10x100mt area. These plots were numbered serially. They were asked to remove all the *P. juliflora* trees including new seedlings & saplings, by root.

They were allowed to take away the wood so procured from these trees & plants free of cost, to their home for their bonafide use.

Complete record of the wood so transported out of the park by every individual and their families was maintained by the park management.

In spite the initial problems, the uprooting work kept went on at a reasonable pace.

Good message was passed on to other villages and we availed this opportunity in persuading them to take up this work on the pattern of Ram Nagar village.

By the end of June 07 E.D.Cs. were formed in all the 14 villages surrounding the park. 1378 people belonging to 338 families had joined hands with the Park management in removing this menace of *P. juliflora* from the park.

On 25.7.07 one more village named Nagla Abhay Ram joined this operation

36 more families belonging to first 14 villages joined the work

The villagers worked hard throughout the summer when temperature rose even to 47 degree C.

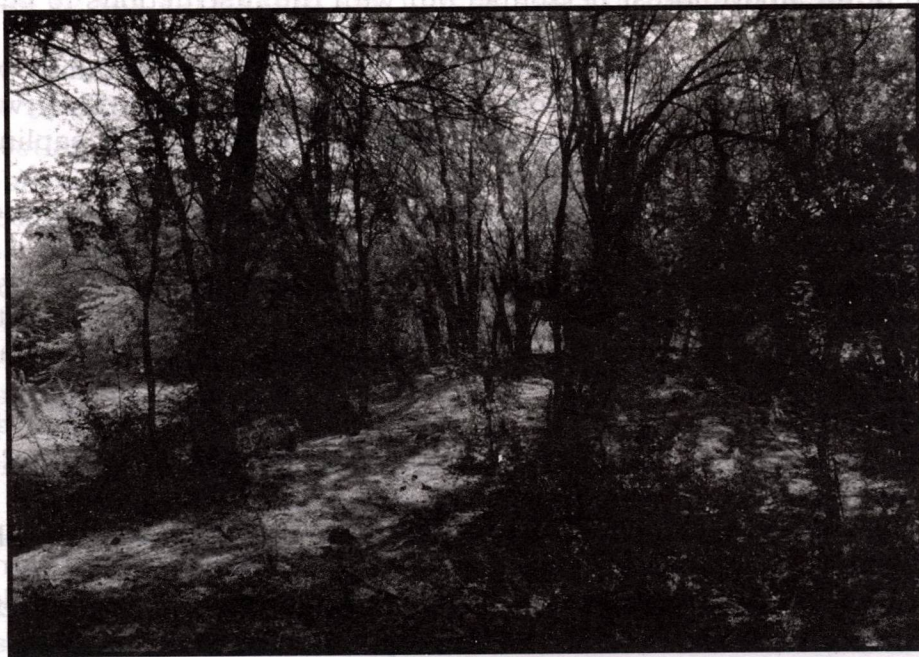
In return of the hard labour the villagers belonging to these 15 villages received **about 71351 quintal of wood up to 31st. AUG 07**

Thus by people's participation we could succeed in freeing about 4.5 Sq.Km. of area, from the *P. juliflora* mother trees along with several thousand seedlings & saplings.

This is not the end. The work is continuing. More & more villagers are joining with great enthusiasm.

The park management is hopeful of accomplishing this impossible task of freeing the park completely from the *P. juliflora*'s mother trees, in just another one year

Perhaps it is the lone example in the country where such a successful managerial intervention of this magnitude has been done by the park management with people's (villagers) participation.



Detailed notes on use of Tranquilizers and Anaesthetics with the help of Flying Syringe against Wild and Feral Animals

*K.K. Mehta

Man has long sought to deliver various fatal, immobilizing or paralytic drugs from a distance into the circulatory system of animals. Strophanthus (Kombe arrow poison) and curare (South American arrow poison) have been the compounds of choice for this purpose. The major objective of the procedure has been to kill the subject by propulsive drug induction. Certain primitive tribes of Africa and South America have perfected the technique to a point which excited the imagination of many investigation.

Within the past decade research workers of the United States and England have explained the potentialities of various strychnos extracts for immobilizing wild animals for live capture. Extensive experimental work directed towards this end was commenced in early 1955, by the Georgia Game and Fish Commission, and University of Georgia, U.S.A. and the curare alkaloids and Synthetic curare like compounds appeared to be in order for continued study. But during the 1st phase of the project, only one wild deer was successfully taken with flaxedil (Lederle Laboratory Division, American Cyanamid Co., Pearl River, New York), and this group of compounds was found to have many undesirable characteristics, further work with similar-acting drugs was discontinued.

After further study with other alkaloids from this plant group (Strychnos Sp. And Chondrodendron Sp.) a fair degree of success was reported from the use of certain strychnine salts for the capture of white-tailed deer (Odocoileus virginianus). Mortality was still in excess of 50% with losses from this approach exceeding that necessary for practical applications. The use of salts from Strychnos nuxvomica was discontinued and an extensive screening programme for other drugs possessing the necessary qualities was thereafter conducted.

It was concluded that the ideal drug for these purposes must possess the following nine characteristics. These are in brief (a) an

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*Chief Wilf Life Warden, H.P.

effective dose must be carried on a small dart (b) stability, (c) rapid absorption, (d) fast onset of action, (e) wide safety margin (f) no antidote required, (g) rapid elimination, (h) no gross effect on gestation, (i) and no permanent damage to the recipient.

After screening more than 100 compounds by subcutaneous and intra-muscular injections into goats, nicotine salicylate which appeared to possess the above characteristics was selected for extensive trials.

Nicotine action or Pharmacology and Toxicology of Nicotine with special reference to species variation:

Tobacco (*Nicotiana tabacum*) and its active constituent, nicotine, have had little if any rational therapeutic application other than psychotherapy and as a pesticide. The pharmacodynamics of nicotine have been the subject of intensive investigation since Langley and Dickinson (1889) demonstrated that topical application could produce ganglionic paralysis.

The term nicotine action of autonomic active drugs refers to an evanescent stimulation followed by ganglionic paralysis, this typical biphasic action is present at all autonomic ganglia, myoneural junctions and affects the central nervous system, varying in duration and intensity as a function of dose, mode of administration and species of animal. Toxic effect of nicotine on invertebrate organism is determined by the degree of development of the nervous system but that vertebrate animals which have enough in common to stand near each other in the phylogenetic order may react differently to nicotine. Scientists compared toxicity of synthetic D-nicotine with natural-L. nicotine and have postulated that variance of toxicity between the two isomers is a function of development of specially specific receptors at the neuroeffector synapse of voluntary muscles, that it is proportionate to the development of the acetylcholine system.

The ability of nicotine to induce experimental Catatonia, similar to the cataleptoid action of bulbo-capnine, was observed in dogs injected with relatively small doses of nicotine tartrate.

Repeated administration of small or sublethal quantities of the alkaloid, or its salts, that isolobinine and nicotine produce mutual tachyphylaxis in rats and that one-tenth of the effective dose for either of these alkaloids will confer protection against convulsive doses, however, tachyphylaxis is less pronounced in cats and rabbits. Species variation inability to eliminate nicotine and unsusceptibility to toxic effects was reported by Larson, (Game and Fish Commission Georgia). The medium lethal dose by intravenous injection, was established for

cats as 2.0 mg/kg, for dogs, as 5.0 mg/kg for mice, as 7.1 mg/kg; and for rabbits, as 9.4 mg/kg. However, when nicotine was perfused slowly, introvenously, over an 8 hour period, dogs could tolerate 2.0 times the lethal dose, rabbits 3.3 times, mice 4.6 times, and cats 10.0 times the lethal dose, this indicates that the ability to metabolize or excrete nicotine is independent of species susceptibility.

Aqueous solutions of chemically pure, natural nicotine, unbuffered, or pH 8.4, or the equivalent amount of nicotine salt, were administered by intramuscular routes, to all experimental animals. To avoid development of tachyphylaxis, animals were used only once, or were allowed an interval of not less than 48 hours for eliminating all traces of the drug. The end point for determining paralysis of animals was loss of locomotor function,.

The minimum paralytic doses of nicotine and the approximate lethal dose for 14 species as tested by the Wild Life and Fish Commission, Georgia, U.S.A. is given in Table below:

Table 1

Paralytic and approximate lethal doses of nicotine, administered by intramuscular injection:

Animal	No. of Observations	Minimal effective dose (mg/kg)	Approximate lethal doses (mg/kg)	Therapeutic Index
Pigeons	20	5.0	9.0	1.8
Mice	100	5.0	8.0	1.6
Rats	50	10.0	15.0	1.5
Rabbits	30	18.0	30.0	1.6
Guinea Pigs	15	8.0	15.0	1.8
Chinchillas	18	10.0	18.0	1.8
Dogs	24	4.5	15.0	3.3
Cats	10	3.5	9.0	2.5
Cattle	38	4.5	9.0	2.0
Horses	6	4.0	8.8	2.2
Swine	4	6.6	14.0	Not determined
Goats	200	3.6	13.0	4.3
Deer	205	3.0	9.0	3.0
Monkeys	8	4.0	6.0	1.5
Zebu(Bos indicus)	1	3.3	-	-
Bison	5	3.5	-	-
Kodiak Bear	4	3.0	-	-
European Brown Bear	4	3.0	-	-

Lion	2	2.5	-	-
Tiger	2	2.5	-	-
Tapir	1	3.0	-	-

The paralytic dose was also tried on the following animals by me:

Strength of nicotine salicylate 200 mg.			
Name	Adm. Mg.	Paralytic dose	
1.Panther		2.5	
2.Bear		2.5 to 3	
3.Barking Deer		1.5 to 2.0	
4.Ghoral		2.0	
5.Rabbits		16 to 18 mg.	
6.Monkeys		2.0 mg.	
7.Goats		1.0 to 3.0 mg.	

After minimum paralytic doses of nicotine an average of 3 minutes is required for development of symptoms of polyuria, locomotor ataxia, lethargy, and catatonia or flaccid paralysis and recovery within three hours. Death generally occurs during the convulsive seizure from lethal doses of nicotine, however, monkeys and cattle may succumb to latent effects of minimum lethal doses many hours after their recovery from paralytic effects. Necroscopy studies of these animals reveal pronounced urinary retention, distended ureters, and acute hydronephrosis with petechiasis, indicative of acute uremia.

In sub-paralytic doses nicotine is an effective emetic in those animals capable of emesis and promotes lethargy or somnolence in all species studies. The therapeutic index for nicotine is sufficiently great to allow the use of careful estimates of body weight in calculating paralytic doses to be administered (by means of the projectile hypodermic syringe) for the purpose of safely inactivating wild, feral or dangerous and unmanageable animals.

Material and methods

Since 1952 to 1955, various equipments for propulsive delivery of the Drug were invented and crossman's Air Gun and dart were actually brought into practice. (See Figure).

Powered nicotine salicylate used to be massed by addition of purified honey in sufficient quantity to form an adhesive, pliable material. This adhesive substance was applied to the shaft of the Dart

and formed to the desired diameter. The loaded darts were used to be placed in tightly closed tubes containing granular calcium chloride to dehydrate and partially harden the compound, dehydration required approximately 24 hours. Upon removal of darts from Calcium chloride the hygroscopic nature of the alkaloidal salt converted it back into the readily absorbable state.

Although more than 200 wild deer were caught with nicotine salicylate (200 mgm strength) administered on darts by the Georgia Fish and Wild Life Commission yet the limited applications of the procedure became increasingly apparent. With this method the necessity of drug induction as a semisolid was essential and, above 225 pounds body weight of subject to be captured the technique presented great mechanical difficulties. Considering the slow speed of induction resulting from the absorption of a paste, it was evident that the delivery of nicotine as a solution was necessary to expand the application of the technique use in larger animals.

Following experimentation with springs, inertia devices, water jackets, combustion chambers, etc., a 'flying type springe' was contrived for delivering a solution into the musculature of animals. A rifle for projecting the missile also was devised. Concurrent with the development of these instruments many previously obscure avenues were opened for capturing and restraining wild and feral animals. This first effective and practical automatic projectile syringe and a method for its delivery are discussed in this report.

Instruments

SYRINGE. A diagram of the projectile is illustrated (Fig. 2) which should aid in describing the mechanism of operation. The syringe is designed for ruggedness and positive action. The barrel is constructed of aluminium and a stainless steel needle (13-16 guage) is pressed anterior base of the cylinder and extended into the chamber. Approximately midway on the needle shaft a brass collar is pressed to facilitate holding in the flesh of the animal until the drug is induced. Into the posterior barrel of the syringe a screw type base or "tail piece" is inserted. This part is made for adequate projection with a nylon fibre skirt attached for stabilization in flight. The base is constructed to accommodate a neoprene "O-Ring" for sealing gas pressure necessary for the forward motion of the plunger.

Mechanism of induction involved a half hollowed, rubber piston, which is inserted at a given distance to separate the anterior or drug carrying chamber from the posterior or combustion chamber. A gas-

forming chemical (Calcium carbide, sodium bicarbonate with citric acid, etc.) is placed within the hollowed portion of the rubber piston and sealed with a brass plug. Water (approximately 0.5 ml.) is induced posterior to the plug and the compartment is sealed with the neoprene fitting on the base. The brass plug serves to separate the chemical from water, and through inertia of forward motion the gas-forming components are brought together ($H_2O + CaC_2$ or $NaHCO_3-COOH.C(OH)(CH_2.COOH)_2$ gas under compression). Acetylene or carbon dioxide is rapidly formed behind the plunger, and forward motion with subsequent ejection ensured. All moving parts and threads are treated with silicon lubricant when each syringe is assembled.

RIFLE: A photograph of the instrument for syringe delivery is shown (photograph). This mechanical appliance was selected for simplicity of operation, accuracy, performance, and reliability in field operations. The instrument is a gas (CO_2) operated rifle (Crossman Arm Co., Rochester, New York) which was designed to accommodate a 50 caliber projectile syringe. The necessary spring reinforcements and adjustments with other breech and bore modifications are now made for propelling the described missile. (Palmer Chemical and Equipment Co., Atlanta, Georgia).

Results

The projectile syringe has proved to be highly effective in delivering various tranquilizers, general anaesthetics, and paralysis-producing compounds into the Musculature of animals.

Hunting Methods

The hunting of wild deer for restocking wild life sanctuaries or depleted areas of wild life, is confined mostly to night work using a "Jack light". When a deer is located from a vehicle equipped with a powerful spot light the operator, using a small head light made the stalk on foot. The shots are made at distance from 10 to 30 yards, with the large hip muscle (gluteus medius, biceps femoris, semitendinosus, or semimembranosus muscles) being the site for drug induction. It usually require 4 to 30 minutes for absorption and circulation of the drug, with subsequent immobilization of the animals so far possible, visual contact is maintained during this period, and the subject is kept in a red light,.

It has been shown by Southern H.N. (1955 Nocturnal animals-Sci. Amen., 193:88-98) that several nocturnal animals in England were unable to detect the presence of red light and this physiological characteristics seemed to apply to deer. Contrary to most preconceived

opinions, the implantation of the syringe does not frighten the Deer and it is of utmost importance not to seriously "spook" these animals following the shot. The immobilized deer are usually found lying down (although some will be found standing in bizaree states of catalepsy), after which they are placed in handling crates as soon as they can stand.

Observation

The time required to regain footing for Deer after nicotine salicytate 200 mg.) was between 3 to 30 minutes whikle for mature Panther one hour 23 minutes, Black Bear (one year old) $\frac{1}{2}$ hour to $\frac{3}{4}$ hours. Anaesthasised Deer, Panther and bears are penned for the last one $\frac{1}{2}$ years and no adverse effects have been observed. One doe of Barking Deer anaesthasised, during the late gestation period raised normal fawn.

Himalayan white goats immobilized twice during gestation gave birth to normal kids and no effect on the reproductive potential was observed among those goats.

To neutralize the effect of Nicotine salicytate. "Diquel" and "Sparings" 50 mg per C.C. were used. The result were very favourable.

From the above report, when it took a Panther $\frac{1}{2}$ an hour to paralyse, I wrote to one Doctor Robert Thomson, in U.S.A. (a friend of mine) about this timing and evident danger from this animal during the duration from the actual shot to paralytic condition of the animal. He has very kindly sent another medicine namely "Acetine" (Succinyl Chloride) also referred to as diacetylchloine chloride 20 mg. in each cc. for trial.

Pharmacological Action

Ancetine causes muscular paralysis by producing a blockage of nervous transmission at the myonerural junction. It has further been found that doses as low as 0.05 mg/kg given intravenously to cats are effective in producing muscular relaxation, and that intravenous doses of 0.1 mg/kg or more produce prompt and complete muscular paralysis which is characterized by short duration of action and extremely rapid recovery. Repeated injections produce reproducible and predictable muscular paralysis, neither tachyphylaxis nor significant cumulative effects being seen. When given by intravenous drip, a predetermined degree of relaxation in a cat (Sciatic nervegastrocnemius muscle), could be closely approximate by adjusting the rate of flow of the solution. The administration of doses of "ANCETINE" sufficient to produce complete neuromuscular blockage has not caused any significant change in blood

pressure (except for the typical asphyxial pressure response in the absence of adequate respiration). No evidence of any histamine-like depressor action has been found thus differing from observations with ditvbocurarube. The ECG of the cat was unchanged during a 2-hour infusion maintaining complete paralysis.

Acute toxicity studies in albino mice showed the intravenous L.D. 50 to be from 0.55 to 0.59 mg/kg. Complete paralysis resulted, with marked dyspnea and anoxia; death was apparently due to respiratory failure. Those mice which survived the initial symptoms exhibited disappearance of anoxia and dyspnea in 2 minutes and had completely recovered within 30 minutes. Chronic toxicity studies on albino rats showed that the intraperitoneal injection of 1 mg/kg, or less, twice daily over a period of 4 weeks, produced no evidence of toxicity.

Precautions for the use of the drug

The drug should be used only by those skilled in the administration of supplemental or controlled respiration and facilities for this procedure, including adequate respiratory exchange with oxygen, should always be immediately available. "ANCETINE" is not an anaesthetic agent and should not be regarded as substitute for anaesthesia; its use does not take the place of giving an adequate amount of anaesthetic agent.

Some anaesthesiologists believe that rapid injection is responsible for the muscular twitching that is seen just prior to relaxation. These fasciculations may be due to the rate of injection of the drug, and may be minimized or avoided by giving the injection, more slowly.

While respiratory depression is usually of every short duration following a single dose of the drug, or following cessation of continuous intravenous administration, there may be an occasion, especially with excessive doses, more prolonged respiratory depression, requiring controlled respiration and the administration of oxygen.

The duration of the effect of "ANCETINE" may depend on plasma-cholinesterase activity. Patients with severe liver disease, severe anaemia, severe malnutrition, and possibly those suffering from polyphosphate insecticide poisoning may have a decreased plasma-cholinesterase activity which may intensify and prolong the action of "ANECTINE" especially if large doses are used. In such cases, in addition to the usual measures of controlled respiration and administration of oxygen, it may be desirable to administer plasma or whole blood for the purpose of restoring cholinesterase activity.

Anectine has been tried by me on Panther (Two years old), Bear (about 2 years old) Rabbits and Monkeys, etc. Approximately I.C.C. per 100 lbs. body weight and proportionately more or less according to weight has been tried successfully. The medicine is quickly absorbable and more effective and much less dangerous to the animal. The drug wears off in about 25 minutes, so that a full dose can be given again. Beasts need about 25 mg. per 100 lbs. The animal usually recovers between 5 to 15 minutes.

A matured panther can be paralysed within 3 to 5 minutes with the medicines, as such there is hardly any danger to anaesthetise the dangerous animals and the medicine can serve our purpose well in capturing or transporting wild animals.

Recommendations:

1. Much experience is required to use the "capchur-gun" and flying syringe and especially the medicines. $1/10^{\text{th}}$ mgr; in excess of the prescribed dose may result into fatality of an animal.
2. The gun can be used only for animals, feral and wild and not for capturing Birds.
3. The gun can play most important part in capturing deer, etc., for transportation to depleted areas, under the conservation programme.
4. The gun is equally useful for transportation of animals within and outside the zoo, as animals become wounded during transshipment, when they are excited by the change.
5. After the animal is immobilized and shifted in transport cages, it is further kept submissive by use of tranquilizers with the aid of this gun.
6. Various drugs which can be injected can be used on animal with this gun. An example of its usefulness is in treating shipping fever among animals.
7. For animal Husbandry Department the gun is indispensable.
8. The gun can be used in capturing and tagging Bears, panthers, Deers, etc., to study their life Histories in the natural habitats and their migratory ranges.
9. The gun can not be used for taking census of Deer as it is too expensive to use. If at all it is to be used, more guns are brought into action by the enumerators.

10. The gun should be purchased only when there is special educated staff meant for the purpose of capturing animals under "transportation of species in depleted area" programme.
11. The medicines used in the flying syringes are highly dangerous to be used against human beings. A painful death may occur due to paralytic condition of the lungs and nervous system. Therefore, full account of the quantity of the drugs will have to be maintained by the Officer-Incharge.

Cheetal

Quarterly News

Wildlife Preservation Society of India gets Financial Support from Uttarakhand State Council for Science and Technology

A Financial Grant of Rs. 143000/- has been sanctioned by the Uttarakhand State Council for Science & Technology for "Strengthening the Wildlife Preservation Society of India, Dehra Dun". The Grant includes support for publication of Cheetal, conducting two nature trails, computer operator, part time documentation assistant and contingency. Rs. 110,000/- has been released during February, 2008

More Members Enrolled

The enthusiasm to join the Wildlife Preservation Society of India, Dehra Dun continued to grow and the following individuals and institutions took up different kind of membership during the quarter:

S.No.	Name and Address of Individual	Type of Membership
1	Prof. SS Deedwani, Retd. Principal (PG College), Kapasam, Rajasthan	Annual Member
2	S. Govind Prasad Maithani, Retd. PCCF (MP), Badripur, Dehra Dun	Annual Member
3	Sri Shekhar Choudhary, S/o Mr. Nirvikar, Police Station, Ranipur, Haridwar	Student Member
4	Mr. R.D. Sharma, 11, Arvind Road, Dehra Dun	Life Member
5	The Library and Information Officer, Library and Information Services, Indian Institute of Forest Management, Nehru Nagar, Bhopal (MP)	Institutional Life Member
6	Sri Digambar Gadgil, 39, Anandvan Colony, College Road, Nasik, Maharashtra	Life Member

Ganga threatened by climate change

Bindu Shajan Perappadan

NEW DELHI: One of the greatest rivers of the Indian subcontinent and the source of life for hundreds of thousands of people, the Ganga is also one of the rivers most threatened by climate change.

According to a report by the Intergovernmental Panel on Climate Change looking at the threat from climate change to human development and the environment, "only the polar icecaps hold more fresh water than the Himalayan glaciers". If the current trends of climate change continue, by 2030 the size of the glaciers could be reduced by as much as 80 per cent", warns the report, titled "Up in Smoke – Asia and the Pacific", released here this week.

Some of India's most important rivers are fed by the Himalayan glaciers. But rising temperatures means that many of the Himalayan glaciers are melting fast, and could diminish significantly over the coming decades with catastrophic results. In the long run, the water flow in the Ganges could drop by two-thirds, affecting more than 400 million people who depend on it for drinking water.

The report warns that in the short term the rapid melting of ice high up in the Himalayas might cause river swelling and floods. The formation of glacial lakes of melt-water creates the threat of outburst floods leading to devastation in lowland valleys.

"India is facing a major water crisis and its per capita grain production is declining. Countries like India cannot be expected to cover the cost of adapting to climate change out of their own resources. They will need financial and other help from the rich industrial countries", says Raman Mehta of Action Aid speaking about the impact of climate change on agriculture.

The adverse impact of climate changes includes water crisis and an increased risk of extinction for an estimated 20 to 30 per cent of plant and animal species in India if the global average temperature exceeds 1.5 to 2.5 degrees Celsius. Climate change will also significantly impact health in India. The most vulnerable will be the poor, the disabled, the youngest and oldest members of the population as they already face limited access to health facilities and have limited disposable income to cover additional medical costs.

Says K. Srinivas of Green-peace, "There are alternative energy pathways that are available to meet India's development needs without the hidden costs associated with fossil fuel-based energy systems."

Source : The Hindu, Nov.23, 2007

NHAI plans to ensure safe wildlife Passage

Saurabh Sinha

New Delhi: Public-private partnership has now made a foray into wildlife conservation. The decades-old national highway passing in the elephant-rich area of Rajaji National Park between Haridwar and Dehradun has been infamous as a killing ground for the pachyderms. But the modern highway that has to be constructed on a build, operate and transfer (BOT) basis will have two exclusive elephant corridors.

The National Highway Authority of India (NHA) has sought the National Wildlife Board's clearance to build two 750-metre-long flyovers in the Rajaji National Park stretch of the Delhi-Dehradun highway. The area below flyovers will be "elephant corridors" that will at least reduce danger posed to them while crossing road.

"The Uttranchal government wanted some steps to be taken for the safety of everyone-elephants and road users. We have now sought the Wildlife Board's clearance for these two flyovers. Once the Supreme Court also clears it, these would be bid out," said a senior official.

About 5-6 km stretch of the Dehradun-Haridwar highway witnesses a lot of elephant movement. This area falls in NHAI's National Highways Development Project Phase-III plan to widen Delhi-Haridwar-Dehradun road. The 77 and 69 km stretch between Muzaffarnagar-Haridwar and Haridwar-Dehradun, respectively, fall in the phase III. In this phase, the government has approved four-laning of 12,109 KM of national highways at a cost of Rs. 80,626 crore.

NAHI had also taken special steps in other wildlife sanctuaries. In Jharkhand, it has fenced road sides passing through wildlife rich zones. In a sections of the Delhi-Kolkata highway here, it has built 11 box culverts under the road for small animals to cross it safely.

A bridge coming up on Chambal river off Kota bypass has been designed as a cable state bridge to avoid putting any piers in the riverbed and disturb a thriving crocodile sanctuary.

India's ambitious highway expansion programme – with a target of modernizing 40,000 km by 2015 for about \$ 50 billion – has to pass through some sensitive areas like wildlife sanctuaries.

Land acquisition and clearance for these areas remains a challenge although the NHAI is now coming up with innovative solutions to meet this challenge.

Source : The Times of India Aug. 28, 2007

Why Bishnois can't forgive Salman

Avijit Ghosh

Bagda ki Dhani : It is been more than eight years since it happened. But the Bishnois of Bagda ki Dhani, a cluster of few dozen homes located 30 km from Jodhpur, have neither forgotten the incident nor are willing to forgive those involved in the alleged crime.

Bagda ki Kankani, a village headline moment Here five Bollywood Saif Ali Khan, Tabu, Nelam - were the killing of two is pending.

"For us, the same as killing our crop, we don't hungry but we Ram Beniwal, a 40

The feeling generations. 80 year old Bishnoi says: killed blackbucks is



VIII student Dinesh Bishnoi has similar feelings, "Salman Khan has been sent to jail. That's how it should have been," he says.

The term, Bishnoi, originates from the 29 tenets (Bish means 20 and no is nine) that the community, mainly found in Rajasthan, Gujarat and Haryana, follows. Protecting trees and wild animals are two such tenets. And as the band of Bollywood actors realized that fateful night, the Bishnois follow it aggressively.

Driving through the Bishnoi villages it Kankani and around, one finds deer and blackbucks grazing in the fields. Many move around in large group of 15-20 Beniwal narrates the recent incident of Bishnoi woman in Bawarla village, situated on the Delhi-Jodhpur Road, who fed her own milk to a baby deer.

Dhani is close to that earned its in October, 1998. stars - Salman Khan, Sonali Bendre and allegedly involved in blackbucks. The trial

killing a blackbuck is a child. Even if it eats say anything. We stay protect them", says Jai year old Bishnoi.

cuts across Sitting on his charpai, Giovardham Ram "Forgiving those who out of question." Class

Source : The Times of India Aug. 30, 2007

World Moves into 'ecological red' Overdraft Point Reached Three Days Earlier This Year Than in 2006

London: the world moved into 'ecological overdraft' on Saturday, the point at which human consumption exceeds the ability of the Earth to sustain it in any year and goes into the red, the New Economics Foundation think-tank said.

Ecological Debt Day this year is three days earlier than in 2006 which itself was three days earlier than in 2005. NEF said the date had moved steadily backwards every year since humanity began living beyond its environmental means in the 1980s. "As the world creeps closer to irreversible global warming and goes deeper into ecological debt, why on Earth, say, would the UK export 20 tonnes of mineral water to Australia and then reimport 21 tones", said NEF director Andrew Simms. "And why would that wasteful trade be more the rule than the exception," he added.

Not only was there a massive gulf between rich and poor but there were deep variations in environmental profligacy between the rich countries. NEF said. If everyone in the world had the same consumption rates as in the United States it would take 5.3 planet Earths to support them. NEF said, noting that the figure was 3.1 for France and Britain, 3.0 for Spain, 2.5 for Germany and 2.4 for Japan.

But if everyone emulated China, which is building a coal-fired power station every five days to feed its booming economy, it would take only 0.9 of a planet.

The NEF report comes as diplomatic momentum builds for UN environment ministers meeting in December on the Indonesian island of Bali to agree to start talks on a replacement for the Kyoto Protocol on curbing climate change that expires in 2012.

Governments have started to sit up and take heed as global public opinion begins calling for urgent action to tackle what has been described as the biggest threat facing humanity. But there is still no meeting of minds between the world's biggest carbon polluter, the United States, and booming emitters like China and India; both sides insisting that the other make the first move.

Source : The Times of India Oct. 2007

New 'Forest' definition may hit tribal rights

Nitin Sethi

New Delhi: The environment and forest ministry is set to increase the ambit of its control over the country's land. It has finalized a definition of forests that will extend the forest bureaucracy's powers over large swathes of community owned land.

While the definition will pit one of the largest landholders in India against communities, the definition will allow some plantations—primarily meant for the paper and pulp industry—to escape the purview of the stringent forest regulations.

The definition, innocuously short, identifies forests as “an area notified as forest in any Act or recorded as forest in any government record.” But the definition goes on to say that such “forests” will include areas having trees, scrub, grasslands, wetland, water body, desert, geomorphic or any other features,. It will also include areas recorded as jungle or forest growing on community owned lands. But it will not include “man-made plantation, fruit orchard and agroforestry tree crops on private and community owned land.”

If the definition is given legal teeth (inserted into the laws via an amendment), it would run counter to the UPA government's pet pro-poor legislation – the Scheduled Tribes and Other Traditional Forest Dwellers Rights to people who live in forest lands. The environment ministry had fought in tooth and nail right from the start, believing it would lead to degradation of forests and large-scale encroachments. At the moment, forest laws do not define forests explicitly. The ambit of the two forest Acts – Indian Forest Act, 1927 and the Forest (Conservation) Act, 1980 – is defined by the Supreme Court order which extends these Acts over any area that can be defined as forest as per the dictionary meaning of forests regardless of land classification or ownership.

“This definition runs contrary to even constitutional guarantees given to the community in the case of Schedule VI areas of northeast. The Act could mean extending control over almost 90% of Nagaland and more than 50% of northeastern state lands”, said Sanjay Upadhyay of the Enviro Legal Defence Firm.

“It also challenges the apex court orders by reducing its ambit in some cases and is an ambiguous explanation that will only lead to

more confusion and possible litigation”, said Ritwick Dutta of the Lawyers Initiative for Forest and Environment.

The definition has been sent to state forest officials for final touches before the ministry moves to give it legal backing, for which it would need to amend existing laws and override SC orders at the same time.

Source The Times of India, Oct. 7 2007

Last Chance to Save Tigers

Vinod Thomas

The charisma of the tiger has inspired poets, persuaded nations to adopt it as their emblem, and sold everything from gasoline to sport merchandise and confectionery. Yet universal appeal has not assured the survival of the tiger in the wild.

There is still a chance to save the tiger from extinction, but that will require a concerted effort in the two largest developing economies, China and India – to control the trade in tiger parts, and to protect habitats.

Of the seven sub-species of the tiger (*Panthera tigris*), the Balinese, Javanese and Caspian tigers have already disappeared and the South China tiger is on the brink.

India is the last hope for the future of the species because it has the largest number of wild tigers and a conservation infrastructure with a system of connected protected areas. But tragically, India's tiger population too has collapsed. Experts say that according to the latest census as well as corroborating evidence, the Indian population of tigers has plummeted dangerously close to the tipping point for the loss of the species.

By its position in the natural order, protection of the tiger is a proxy for the state of environmental sustainability in the country. Judging by the status of the tiger – and other magnificent animals – we would have to discount some of the impressive economic growth that India has achieved in the last decade. How could this have happened? Far and away, the first cause of the crisis is poaching to satisfy the demand for tiger products for traditional oriental medicine in China and other parts of East Asia. Incidentally, poachers have also turned to the remaining 300 or so Asiatic lions in the Gir forests of Gujarat because lion parts are indistinguishable from tiger parts in the East Asia markets.

The second reason is that in the past decade the areas inhabited by tigers have fallen by two-fifths, with intense competition for land, water and forests, and the endless encroachment of villages onto protected land. The lack of political will to give adequate priority to the

preservation of the natural environment has fuelled the destruction of the environment.

What is worse, there are now plans to legalise the sale of tiger parts from tiger farms in East Asia. Lobbyists for legalizing tiger trade argue that flooding the market with farmed animals will reduce the price of tiger and therefore the profits from poaching. A cited analogy is that people don't hunt wild turkeys for Christmas as supermarkets overflow with farmed supplies. But in the case of tigers, opening even limited trade will only increase hunting of tigers in the wild. The reason is that poaching in India (by poisoning, or with steel traps) costs only \$ 40 and \$ 60 a tiger, while maintaining one in captivity in East Asia costs \$ 2,000-4,000. That cost difference makes it improbable that wild-tiger parts will be priced out.

So there really is no alternative to confronting poaching for tiger parts for use in oriental medicine. Campaigns need to be strengthened highlighting the irreversible damage this practice cause to wild tiger populations. Indeed, the World Federation of Chinese Medicine Societies has declared that tiger parts are not necessary in traditional medicines – alternatives are available and effective.

Also, India needs stronger efforts in conserving habitats. Four decades ago, the Indian government initiated Project Tiger, involving protected areas and wildlife corridors to assure a genetic pool, protective measures and enforcement. This led to a dramatic population recovery, but only for a time, as commitment languished.

Going forward, there needs to be a strong effort to ensure adequate number of protection staff with motivation and adequate remuneration for facing daily hazard at the hands of poachers. They also need the supply of modern inputs in conservation. Models of conservation need to be modernized, bringing in commercial operators working alongside or under official wildlife agencies.

Forest-based communities also need a stake in protecting the tiger. This would mean turning what is often seen as a liability into an asset and a source of income for local communities. There are worldwide lessons, even if limited – from Costa Rica, Singapore, South Africa, and India itself – on how eco-tourism can simultaneously bring environmental protection and prosperity. Importantly, Prime Minister Manmohan Singh has taken a personal interest in the cause of the tiger and has established a new National Tiger Conservation Authority.

Strong follow-up action is required at all levels. These efforts also call for sizable financing. Indian corporations, such as Tata, and the Asian business diaspora could help in the investments. Corporations featuring the symbol of the tiger, such as Exxon Mobil *(they have a Save the Tiger fund), Kellogg or Asia Pacific Breweries with Tiger beer, as well as international financial institutions, could support the cause. The drive could get a boost if illustrious personalities lend their prestige to it – imagine a campaign fronted by Tiger Woods.

Extinction of the Royal Bengal tiger, lord of the Indian jungle, would be an irreversible loss to India's heritage and a signal of the environmental dangers of the current development path. It is urgent that India and the world community weigh in on a concerted programme to save the tiger.

The writer is with the World Bank. Views expressed are personal.

Source The Times of India, Sept. 8, Oct. 7 2007

Wildlife Act to be made stringent

Nitin Sethi

New Delhi: The Salman Khan case may have hogged headlines but behind the scenes, the government is moving fast to strengthen provisions of the Wildlife Protection Act, 1972 as well as improve enforcement against poaching and other wildlife crimes.

The ministry of environmental and forests is close to finalizing amendments that will strengthen criminal provisions of the Wildlife Protection Act. At the same time, the first-ever meeting of the advisory board of the National Wildlife Crime Control Bureau will be held on Thursday.

The advisory board, constituted recently, is chaired by the director general (forests) and also the DIG level or above officers from the Narcotics Control Bureau and the Central Bureau of Investigation. The board, set up by the ministry, has also brought in expertise from outside the government by co-opting people from non-government institutions in the field. They include Sameer Sinha from Traffic India, Ashok Kumar from Wildlife Trust of India, Sanjay Upadhyay of Enviro Legal Defence Firm and Ashok Desai of Wildlife Protection Society of India, besides others. While the board meets to suggest ways to strengthen enforcement the ministry will be taking a last look at suggestions put forth by a sub-committee on strengthening criminal provisions of the Wildlife Protection Act.

One of the key amendments is to create special provisions for crimes involving mega fauna like tigers and elephants. Sources said that a move was also afoot to align the Act better with the Criminal Procedure Code. "Confusion prevails at the moment which we hope to solve through these amendments," a senior ministry official told TOI. The ministry is also considering streamlining the Act to create a clear relationship between the seriousness of the crime and the punishment.

Source The Times of India, Sept. 6, 2007

Cheetal

Young Readers Section

Penguin

A penguin is a water bird that can't fly. It has webbed feet and wings that look like flippers. Many penguins live in the icy waters in or near Antarctica. Penguins have short legs and tall, torpedo-shaped bodies. There are 17 species of penguins, ranging in size from the largest emperor penguin to the diminutive airy penguin. The emperor penguin can grow to almost 4 feet tall and may weigh up to 100 pounds. The fairy penguin, also called the little penguin, stands about 1 foot tall and usually weighs about one & a half pounds. Galapagos penguin lives the farthest north, near the equator in the cold waters around the islands of the same name. Eight other species of penguins make their home among the islands near New Zealand and Australia. Three species inhabit the coast of South America, and one type lives near Southern Africa. Six species live far to the South, in the icy waters near Antarctica.

Source : The Times of India Oct.7, 2007

जाने अपने सौर मंडल के बारे में

क्या आप जानते हैं कि पृथ्वी और सूर्य के बीच की दूरी कितनी है और हमारे सौर मंडल का सबसे बड़ा पिंड कौन सा है? और किस ग्रह के सबसे ज्यादा उपग्रह हैं? नहीं, हम किस लिए बताते हैं आपको कि पृथ्वी और सूर्य के बीच की औसत दूरी 15 करोड़ किलोमीटर है। सूर्य हमारे सौर मंडल का सबसे बड़ा पिंड है। उसका व्यास कोई तेरह लाख नब्बे हजार किलोमीटर है जो एक अनुमान से पृथ्वी से लगभग 109 गुना बड़ा है। यहां हम आपको एक बात और बता दें कि ब्रह्मांड में हमारे सूर्य जैसे एक खरब सूर्य है। हमारे सौर मंडल में सबसे अधिक प्राकृतिक उपग्रहों वाला ग्रह है बृहस्पति। इसके 63 उपग्रह हैं। और सौर मंडल के सभी ग्रहों का परिमाण मिलकर जितना हुआ उसका ढाई गुना परिमाण बृहस्पति का है। बृहस्पति के अतिरिक्त शनि के 56 उपग्रह हैं, यूरेनस के 27, नेपच्यून के 13, मंगल के दो और पृथ्वी का एक उपग्रह है। शुक्र और बुध के कोई उपग्रह नहीं हैं।

Prime Parts of Birds:

Birds are unique. They have special body parts that set them apart from all other animals. Some of them are given below:

Fowl Ball:



Human beings have binocular vision which means that both eyes focus on the same image. Most birds have monocular vision most of the time because each eye focuses on a different object. Birds have binocular vision only when they focus straight ahead with both eyes focused on the same object.

Then ask each person to gently shut one eye or cover one eye with a hand and look around. Ask if they can tell the difference between one-eyed sight and two-eyed sight. (Animals with binocular vision can judge distance better than those with monocular vision).

Gizzard Grinders:



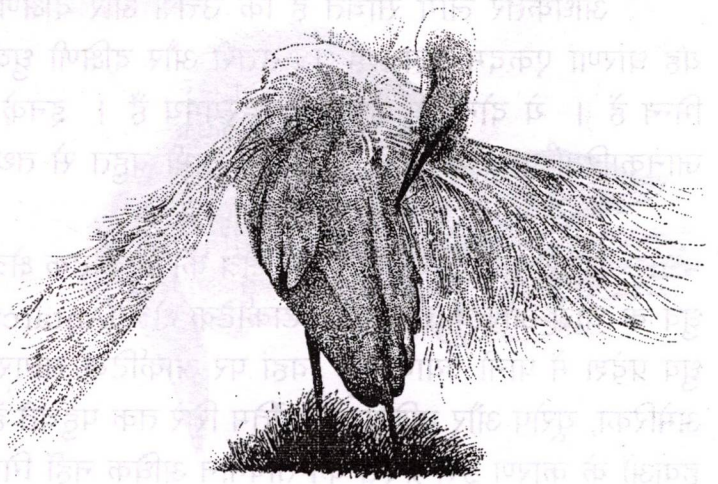
Birds do not have teeth, but they do have a grinding muscular stomach called the gizzard. Many birds also swallow grit (small pebbles, stones, eggshells and other hard materials) which ends up in the gizzard and helps grind seeds, bones and other hard-to-digest food.

The gizzard, by breaking down the food, helps birds get the nutrients from the food they eat. That means they can get more energy from less food, which saves them time looking for food.

The Ostrich eats, along with other things, very coarse vegetable matter. This is not easily digestible if left to stomach muscles alone. Ostriches therefore swallow up to 1 kg of pebbles, up to 2.5 cm in diameter. Water birds such as flamingoes also swallow dust to help digestion.



The food of many birds includes indigestible materials such as bones, beaks, teeth, fur, feathers, husk and chitin (i.e. the substance of which the external skeleton and wings of insects are made). Birds have evolved a special method to get rid off such indigestible substances. These form balls in the stomach, and are cast out through the mouth in the form of small balls known as pellets. In carnivorous birds such as owls and hawks anything that cannot be broken down in the stomach is stored in the gizzard and thrown out through mouth as pellets. Even the Little Green Bee-eater has been observed doing this.



A Handy Gland:

Another “part” that birds have that other animals don’t have is an oil gland. The oil gland or the preen gland is on the bird’s rump right above the base of the tail. The gland secretes an oil that the bird squeezes with its bill and spreads on its feathers and feet. The oil helps keep the feathers waterproof, flexible, and in good condition. Look out for a Spotbill Duck rubbing its beak on the oil gland at the rump and the moving the beak in the body feathers. Birds like grebes, ducks and gulls also spread oil on their feathers when they preen.

Boning up on Birds:

Bird bones are not only light weight but also very strong. That’s because they are hollow or partially hollow, and some have thin reinforcing braces inside for support.

Feather Features

Birds are the only animals in the world with feathers. Without feathers birds would not be birds. Feathers help a bird to fly, attract a mate, and stay warm.

उत्तरी और दक्षिणी ध्रुवों के मौसम में फर्क क्यों है?

हमारी पृथ्वी का आकार नांगी जैसा है जिस प्रकार नांगी के दानों सिरे चपटे होते हैं, ठीक उसी प्रकार पृथ्वी के दोनों सिरे भी चपटे होते हैं । इनको हम दक्षिणी और उत्तरी ध्रुव (South and North Pole) कहते हैं ।

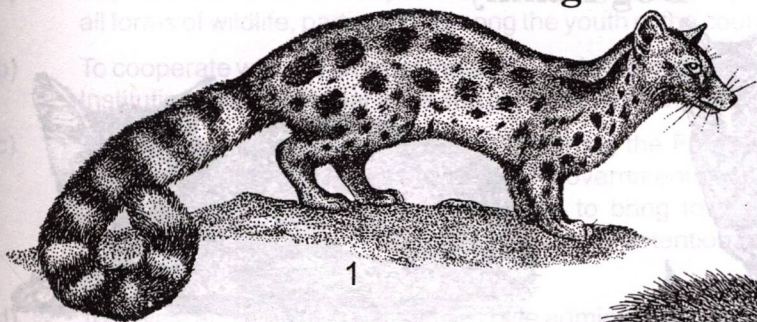
अधिकतर लोग सोचते हैं कि उत्तरी और दक्षिणी ध्रुव एक जैसे ठण्डे हैं, लेकिन यह धारणा एकदम गलत है । उत्तरी और दक्षिणी ध्रुवों के क्षेत्र एक दूसरे से बिल्कुल भिन्न हैं । ये दोनों ही क्षेत्र बड़े रहस्यमय हैं । इनके विषय में वैज्ञानिकों ने बहुत सी जानकारीयां प्राप्त कर ली हैं, लेकिन अभी बहुत से तथ्यों का पता लगाना बाकी है ।

उत्तरी ध्रुव के चारों ओर के क्षेत्र को आर्कटिक क्षेत्र (Arctic Region) और दक्षिणी ध्रुव के चारों ओर के क्षेत्र को एंटार्कटिक क्षेत्र (Antarctic Region) कहते हैं । उत्तरी ध्रुव प्रदेश में पानी ज्यादा है वहां पर आर्कटिक सागर है । इस सागर के तट उत्तरी अमेरिका, यूरोप और एशिया के अंतिम सिरे तक पहुंचते हैं, आर्कटिक सागर से आने वाली हवाओं के कारण इस प्रदेश का तापमान अधिक नहीं गिर पाता । यहां -35° से -10° सेंटीग्रेड तापमान रहता है । इस तापमान पर पेड़-पौधे, जानवर और मनुष्य जीवित रह सकते हैं, इस प्रदेश में रहने वाले लोगों को एस्किमो (Eskimos) कहते हैं ।

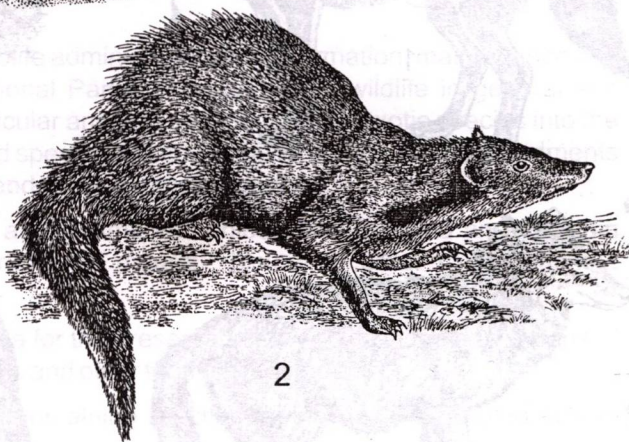
दक्षिणी ध्रुव प्रदेश की अधिकतर जमीन बर्फ से ढकी हुई है, बर्फ से ढका क्षेत्र सारे अमेरिका के क्षेत्रफल से भी दोगुना है । यह धरती का सबसे ठण्डा प्रदेश है । जाड़े के दिनों में यहां तापमान -40° से -75° सेंटीग्रेड के बीच में रहता है । गर्मियों में यहां तापमान बर्फ के तापमान से नीचे ही रहता है । यहां पर पेंगुइन (Penguins) नामक पक्षी रहते हैं, कुछ कीड़े-मकोड़े और पौधे भी यहां जीवित रह पाते हैं । यहां पर वायु का दबाव अधिक रहता है । आजकल वैज्ञानिक इस क्षेत्र के विषय में अधिक जानकारी प्राप्त करने में लगे हुए हैं । अब तक अपने देश भारत के भी दो दल इस क्षेत्र में जा चुके हैं । उन्होंने यहां के विषय में बहुत सी नयी बातों का पता लगाया है । यहां कुछ ऐसे जीव-अवशेष भी प्राप्त हुए हैं, जिनसे पता चलता है कि कभी इस क्षेत्र की जमीन काफी गर्म थी और पेड़-पौधों से ढकी हुई थी, अभी तक यह पता नहीं चल पाया है कि यह बर्फीले क्षेत्र में कैसे परिवर्तित हो गई ।

Wildlife Photo Series for Identification

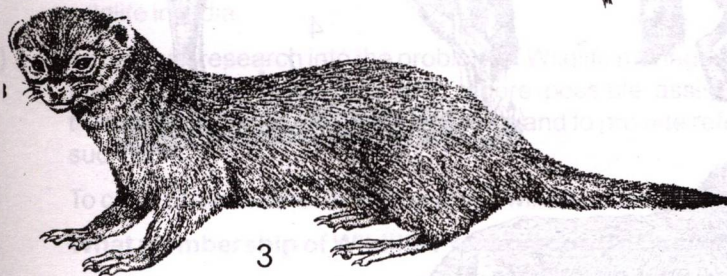
Mongoose



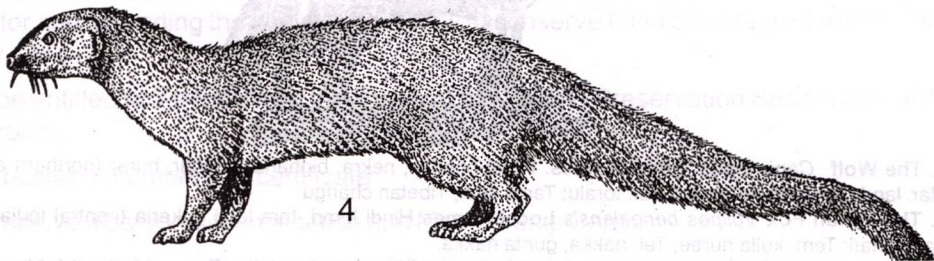
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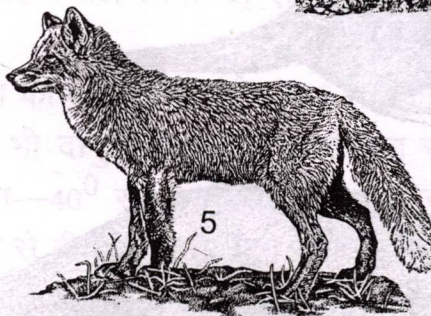
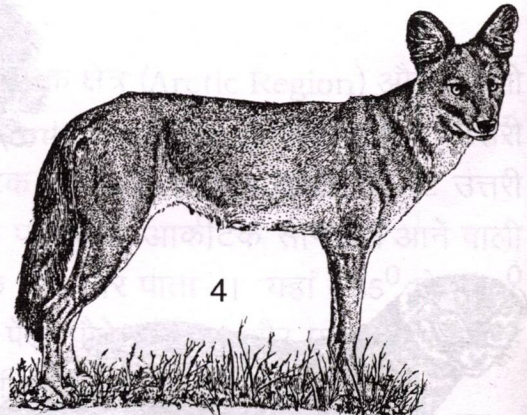
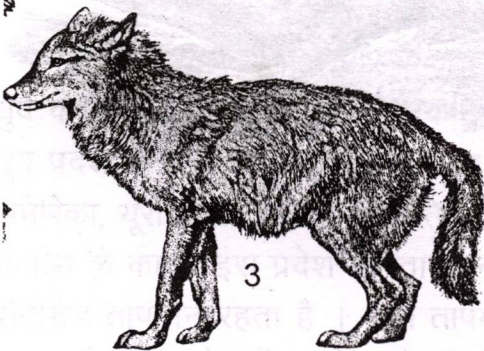
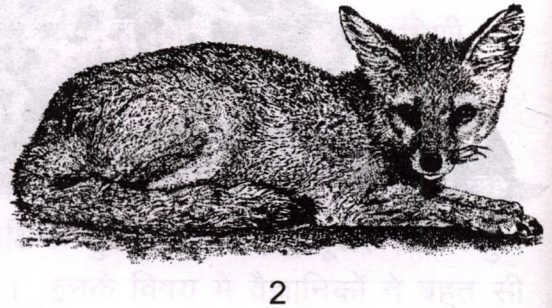
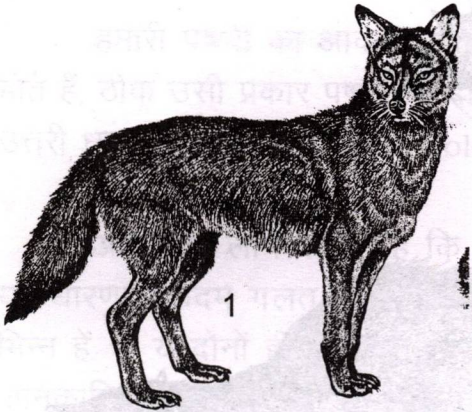


4

1. The Spotted Linsang, or Tiger-Civet *Prionodon pardicolor* Local Names Bhotla zik chum; Lepcha sutlyu, silu.
2. The Stripednecked Mongoose *Herpestes vitticollis* Local Names Tamil Sare keeree; Mal. chen keeree; Kan. Kemp keeree.
3. The Common Mongoose *Herpestes edwardsi* Local Names. Hindi mangus, newal, newara (north and central India); Mar. mungoos; Guj. nurulia; Tamil, Mal & Kan. keeree; Tel. yentawa mangise; Bur nweyba
4. The Small Indian Mongoose. *Herpestes auropunctatus*

Wildlife Photo Series for Identification

Dog Family



1. **The Wolf** *Canis lupus* **Local Names.** Hindi bheriya, nekra, bighana, hundar, hurar (northern and central India); Mar. landga; kan thola, vraka; Tel. toralu; Tamil onai; Tibetan changu
2. **The Indian Fox** *Vulpes bengalensis* **Local Names** Hindi lomri, tom lokri, tokeria (central India) Mar. kokri; Kan. sanna nari; Tem. kulla nuree; Tel. nakka, gunta nakka.
3. **The Jackal** *Canis aureus* **Local Names.** Hindi gidhar (north India); kola (Deccan & South); Mar. kolha; Ben. shial; Tamil nuree; Kan. muree, kunni nuree; Tel nakka; Mal. koorukan, Bur. Kway at.
4. **The Dhole, or Indian Wild Dog** *Cuon alpinus* **Local Names.** Hindi dhole, son, ram Jangli kutta ban kutta; Mar. kolsun. kolsa kolsara; Guj. kol kutta; Kan. kadu nai. chira nai; Tel. rezakutta; Mal. & Tamil chen nai, kattu nai; Himalayas bhaosa, bhoonsa buansu; Kash. remkun; Tibetan siddaki; Bur. tor kway.
5. **The Red Fox** *Vulpes vulpes* **Local Names** Hindi lomri; Kash. loh; Nepali wamu; English Hill Fox(Himalayas, Desert fox (Desert Zone).

The Wildlife Preservation Society of India

1. The aims and objects of the Society are as follows :-

- (a) To promote interest and impart knowledge regarding the preservation and conservation of all forms of wildlife, particularly among the youth of the country.
- (b) To cooperate with the Govt. of India and State Governments and with others Societies and Institutions having similar aims and objects in working for the interests of wildlife.
- (c) To assist in enforcing and actively supporting the Forests Acts. Wild Birds and animals Protections Acts and Rules etc. of State Governments and the Indian Arms Act and Rules in so far as they pertain to wildlife and to bring to the notice of the authorities any infringement of the same and to assist in the detention and prosecution of offenders in respect of such laws.
- (d) To advise and help the Govt. and wildlife administrators in the formation, maintenance and protection of Sanctuaries and National Parks, preservation of wildlife in general and endangered species of India in particular and in the introduction of exotic species into the country, rehabilitation of endangered species etc. and in the formulation and amendments of rules and acts, so as to conserve and increase wildlife stocks.
- (e) To raise funds for carrying out the above aims and objects and to found and maintain museums reading rooms and libraries of natural history in order to disseminate knowledge regarding wildlife.
- (f) To carry out publicity and propaganda for the preservation of wildlife in India by means of monographs, journals, films, filmstrips and other feasible methods.
- (g) To assist members of the Society in obtaining facilities for viewing and photographing wildlife in India.
- (h) To conduct research into the problem of Wildlife management in India, and in pursuance of this, to initiate, encourage and, where possible assist in the projects of the study of threatened species and related objects and to provide reference and research facilities for such work.
- (i) To carry on such other activities which will serve the above subjects.

2. What membership of Wildlife Preservation Society of India will entitle you to ?

- (1) You will become an active member of the growing group of Wildlife enthusiasts, who enjoy working for and spreading the knowledge of how to conserve India's heritage of wildlife for posterity.
- (2) You will be entitled to the full use of the library of the Wildlife Preservation Society and of its reading room.
- (3) You will receive a membership certificate.
- (4) You will receive a personal Identification and Membership Card.
- (5) You will be entitled to buy all publications of the Society at a concessional rate.
- (6) You will be entitled to buy at concessional rates the Societies Greeting Cards, Calendars. Tie, Label badges and the Balance of Nature Game (specially Published in colour for its educative and recreational values).
- (7) You will be supplied "Cheetal", the quarterly journal of the society free.

3. For membership particulars write to Honorary Secretary, Wildlife Preservation Society of India 7 Astley Hall, Dehra Dun.

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